

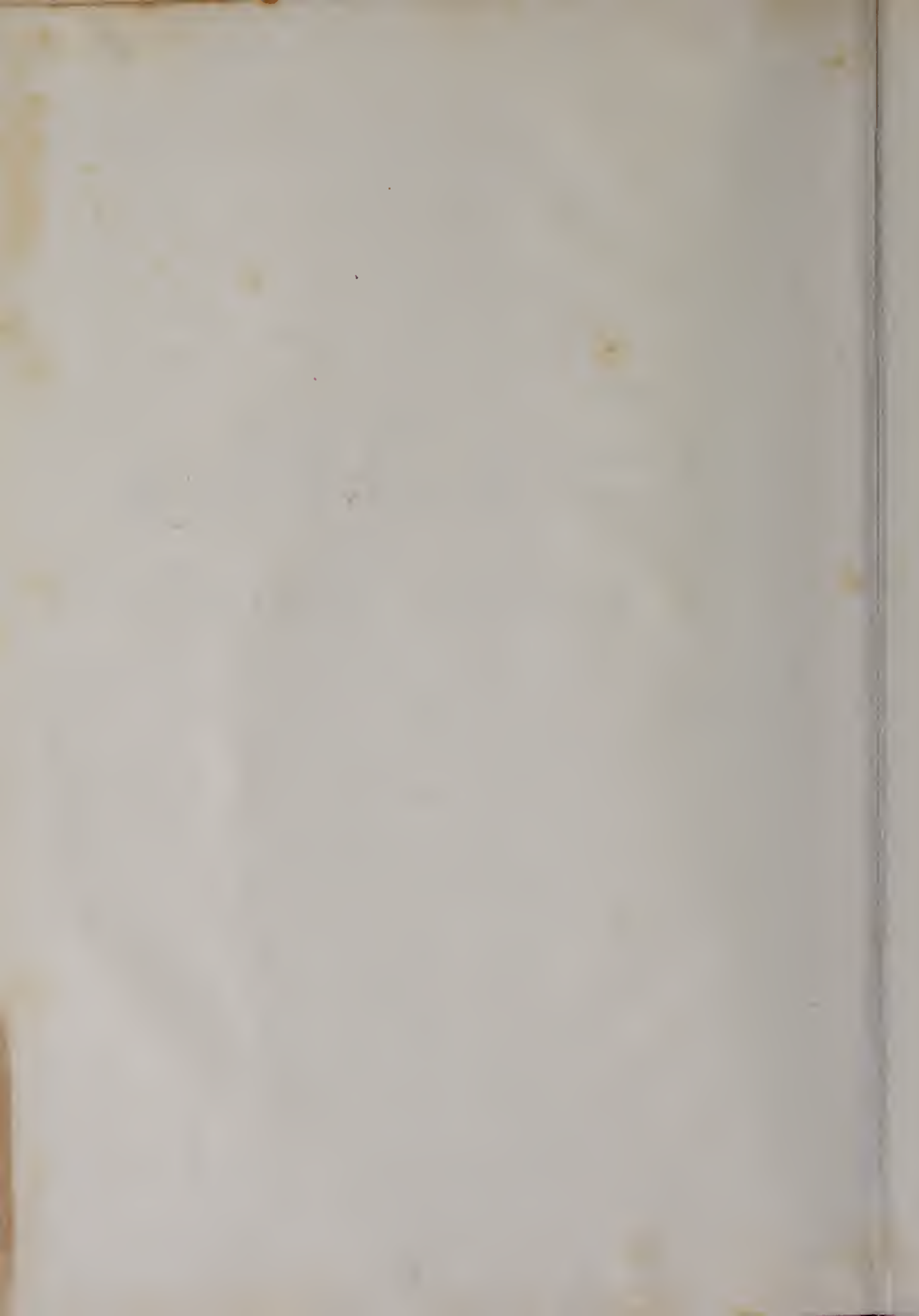


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## The Photographic News, January 2, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

REMINISCENCES OF OLD LONDON—PARKESINE—SWEDISH FILTER PAPER—CHORUS PARTS IN MUSIC.

*Reminiscences of Old London.*—There are many pictorial applications of photography which are peculiarly suitable to the art, and which if properly cultivated would be a great boon to the public. One of these was recently suggested by Mr. Thomas Arches, well known in literary circles as one of the most amiable of journalists. He pointed out what a capital field for photographic illustration the old nooks and corners of London would be, and especially those which are hallowed by cherished reminiscences and which are daily passing from us. Scenes such as these are peculiarly fitted to be depicted in the camera, and the pictures would be almost invaluable to future generations. Discretion would of course be necessary in selecting the proper objects to be photographed and depicting them, so that what is valuable and of interest should not be overlooked; but there are many artistic photographers with antiquarian tastes, who would be thoroughly qualified to do such work. London relies disappear so fast that one would have to be very attentive not to let them disappear unheeded. We do not know whether the "Old Tabard Inn" for instance, has been photographed, but here is a very good illustration of what might be done in securing interesting camera sketches of Old London. Temple Bar will be found missing one of these mornings, as well as its old relative St. John's Gate, Clerkenwell, like many less conspicuous but not less interesting monuments which have been quietly swept away during the last ten or twenty years, to make room for improvements. Reminiscences of old London such as these possess a far wider interest than that felt by the few archaeologists who at the present moment are the only people, apparently, who occupy themselves with these matters.

*Parkesine.*—The compound of collodion and castor oil known as parkesine is still sent into the market in large quantities, and, notwithstanding its rather high cost, is eagerly sought for in the manufacture of many fancy articles. Upwards of one ton a week of the material is prepared by Mr. Daniel Spill, of the Parkesine Company, and this finds a ready sale, the material being employed for purposes similar in character to those for which ebonite or vulcanite is used. We do not know any one who has employed photographic utensils, baths, dishes, trays, and the like prepared from Parkesine, but the light, flexible nature of the compound renders it apparently very suitable for such purposes. Very thin films of the material, of a transparent non-actinic tint, have been suggested for a substitute for orange coloured glass in the dark room, but we do not know if they have been so employed. Nevertheless, photographers do use mixtures of collodion and castor oil—*collodion cuir*—occasionally for printing upon, when a good tough collodio-chloride or some such film is required.

*Swedish Filter Paper.*—A great dearth of Swedish filter paper seems to exist at the present time, much difficulty being experienced in obtaining supplies. Swedish paper of this kind, as many of our readers may know, is far superior for delicate chemical manipulation than the ordinary English description. This is not only of a more open nature, and therefore allows fine impurities to pass through which would be separated by paper of closer texture, such as that made in Sweden specially for the use of chemists; the latter moreover leaves on burning a far less amount of ash, and this is naturally a matter of importance when valuable precipitates are calcined or fused. It seems that there are only one or two firms in Sweden which manufacture this fine paper, and they do so only at certain fixed periods, making at one time sufficient material to last for several years, and it is only when the stock in the hands of the dealers is exhausted that a fresh batch is manufactured.

The date of the last manufacture must have been some time ago, for Swedish filter paper is now scarcely to be met with in London at the present moment.

*Chorus Parts in Music.*—It is surprising that music publishers have as yet in no way availed themselves of the services of photography in reproducing scores. We know that oratorios and operas of a popular nature are published in many editions, the difference in the same being, as a rule, merely in the size of the type. There is, for instance, a large ten shilling edition, full music size, then a two shilling edition, and of most of the popular works there is also a small one shilling edition. Nothing would seem easier, then, than to take photographic lithographs or photo-collotypes of the large edition, on a smaller scale, and thus obviate all the expense of re-writing or re-scoring the whole work. Having only black and white to deal with, there could be no difficulty whatever in the matter, and we think that, well done, the reduced copies by photography would be much clearer than if produced by the hand in a cheap manner. As to chorus parts, supposing each chorister to be supplied with a copy, they need be of very limited dimensions indeed—of the size of a cabinet picture, for instance—and ladies and gentlemen would not then be troubled to hold up a heavy book, or a thin flapping sheet of music, for several hours. Text books of operas, such as are sold at the doors of the theatres, might in like manner contain photographic reductions of the principal portions of the music, which, if clearly printed, might be on a very small scale indeed, and yet perfectly legible.

### AMERICAN CORRESPONDENCE.

MEANS OF EXCLUDING CHEMICAL RAYS—AN ERROR AND ITS REMEDY—REDOUCHING AT NIGHT.

*Means of Excluding Chemical Rays.*—It has often been said that photographers work too much in the dark, and the saying is a true one; but the difficulty of obtaining orange glass or tinted paper sufficiently non-actinic for the dark-room window has been the cause. The use of bicarbonate of potash solution has often been recommended as a substitute for other means, its use allowing much light of a harmless nature to enter the dark room. But the objection to its use again, has been the difficulty of applying it. Mr. J. M. Blake, a valued correspondent, gives me some useful hints on the subject, from which I will make some extracts. He says:—

"Four years' experience in its use has confirmed my first impression as to its utility; but I can now give some further hints that may be useful. My attention was first drawn to the properties of this solution by mention made of it by Mr. B. Ford (see *Photographic News*, 1869, p. 451). He employed the solution, inclosed between two plates of glass, and was thus enabled to watch development through it when out of doors. Soon after I had given the results of some experiments, made to determine the comparative value of this means of illumination, the matter was reduced to practice, and very little modification has since been found necessary in the original arrangement. In the first place, it is well, as involving less trouble and expense, to depend upon yellow paper, as heretofore, for the general lighting of the room—that is, when a window of sufficient size is available—but to have some means of darkening this readily, when danger of fogging is apprehended. Then immediately opposite, and as near as possible to the place it is most convenient to hold the plate while developing, have one or two common cylindrical quart bottles filled with half saturated solution; each should stand upon a small circular shelf with raised edge, placed at the bottom of an opening in a thin board partition. White light should be completely excluded by tacking elastic woollen cloth, so as to press the edge on against each bottle, and also by blacking the bottoms if found necessary. The necks of the bottles should come just inside of the partition, the shelf being inclined for this purpose; thus arranged they can be taken out on cold nights, to avoid freezing. Glycerine or alcohol is not admissible as a preventive; it would reduce the chromic acid. Only solution made from clean crystals should be used. This apparatus will throw a bright light upon an object brought near to it, and its



chief value will be for the critical examination of negatives during and after development. Few will undertake to light the whole room by this means, although it is easy to imagine what a non-actinic paradise is thus brought within the range of possibility.

"In order to make the most of the small aperture that we do use, it is necessary that the light from the sky or snow-covered ground, &c., should not be obstructed from reaching the bottles. It will then pass through from all directions, as through a globe lens, though from an even larger field. The globular form of containing vessel will thus be found superior to the flat, but a cylindrical vessel is cheaper, and more easily replaced, while practice shows it to be little inferior to the globular form. Two one quart bottles of bright glass were found equal to an eighty-ounce thin globular flask eight inches in diameter. The bottles can be placed close to an argand lamp when preparing plates in the evening, and thus a powerful light thrown to a long distance, making drying racks and bath visible with an entirely safe light, while by a near approach a splendid light can be got for development.

"It is well, once in a month or two, to filter the solution, and wipe the inside of the bottles, to remove any deposit that may obstruct the light. Two four-ounce vials filled with nearly saturated solution, gave a splendid illumination inside a tent of the Rouch form; one was placed in the top and received the skylight. When the sun was shining on one of the vials, but screened by tissue paper, a light was obtained that a photographer from habit would instinctively shrink from, but plates were prepared, drained, and developed, quite free from fog. The advantages of having such a light to develop by will strike any one on trial. It often happens, in many mechanical operations, that a workman will accomplish much more work, and do it better, if pains be taken that he has a proper light by which to work. Employers often overlook their own interests by not recognizing this simple fact. Why should this be any the less true in the case of development, an operation requiring great experience and care, and attentive watching? In a proper light, the point where the last portions of clear glass are leaving the shadows, or the first symptoms of fog, can be readily detected. Who cannot recall experience in working in some black hole, where the operations have been pretty much reduced to the game of hit or miss; and you could only know what you had bagged, or what blunders you had failed to commit, on emerging into daylight. This is an extreme case; good work can be done if care is taken to profit by ordinary means of illumination. The use of the light through bichromate of potash solution, it is claimed, will enable us to make still another step in advance.

"And now in regard to the reason of the superiority of this solution: the spectro-scope shows at once. If we start with a very dilute solution, we will see that the transmitted light shows the spectrum in the red and yellow with undiminished brilliancy; while the green, and part way into the blue, are visible to a certain extent. As we increase the strength of the solution the blue is soon cut off entirely, and with a strong solution the portion of the spectrum that contains the active chemical rays is suddenly cut off from the middle of the green, while the red and yellow rays are transmitted with little loss of brilliancy. That portion of the green remaining adds to the illumination, while its chemical activity is almost nothing.

If we compare yellow pot-metal glass, just such as is commonly sold for this purpose, we find the light greatly diminished in the red and yellow, and while the transmitted light is thus robbed of its most valuable part for visual purposes, the spectrum can be traced far into the blue. A specimen of fluted yellow glass was found not to be superior to the other variety.

"There is an orange chrome paper, such as used for envelopes. It may be known by its tinder-like properties, the least spark spreading rapidly on its surface. When this is oiled it gives a splendid orange light, though the spectro-scope reveals blue light, and shows the red and yellow with greatly diminished brilliancy. Then there is the common yellow envelope paper, which fades on the side exposed to light; this is inferior to the orange chrome paper described above. Asphalt varnish is utterly wretched, greatly diminishing the light, and transmitting much blue.

"I have not had an opportunity of comparing the non-actinic muslin and silk advertised in European journals, nor a veritable sample of silver stained glass. Our stockdealers appear to have made no effort to introduce either. Certain varieties of flashed red glass make perhaps the most effective screen known; but there is the drawback, that little light is transmitted, it being only a

part of the red. Full sunlight may be allowed to fall, through a suitably chosen sample, upon a sensitive plate for several seconds without producing fog. Yet by the aid of the spectro-scope and direct sunlight, blue or violet transmitted light can be detected with little difficulty, provided we superpose a piece of green glass to cut off the glare of red light. A blue sun can be seen by simply looking through the red and green glass mentioned, with the addition of a piece of blue glass.

"The utmost amount of light that can be transmitted by any possible medium can of course only approach the amount that falls upon it. If one medium transmits three times as much light as another, and has at the same time the advantage that a sensitive plate can be exposed to its full intensity thirty times as long without producing fog, it is reasonable to conclude that the former is ninety times more efficient. If we reason in this way we may take the above figures as expressing the relation of bichromate solution to yellow glass. If we choose, we can continue to dilute the solution until the same number of seconds' exposure to its full intensity will fog a plate, as when it is closely approached to the yellow glass window. Now our solution will not admit very much more light than it did before, since, when strong, it transmitted the greater part; still there is a marked increase in the light, and it looks so white, that one at first can hardly credit that a plate will stand as good a chance of developing up clear as before the comparatively dark yellow glass window. A landscape was taken in ten minutes through a yellow glass, by means of a portrait lens."

(To be continued.)

## A MONTH'S TRIP WITH MY CAMERA.

BY REUBEN MITCHELL.\*

AFTER dinner we decided to leave Paris for Rouen by the 7.20 train. My friend having, as usual, settled our account, we had our luggage conveyed to the station, and were soon on our way to Rouen. Darkness coming on soon after we started, I could see very little of the country, but it appeared to be flat and uninteresting, the line running along the side of the river Seine nearly all the way from Paris to Rouen, where we arrived late in the night, had our luggage transferred to a small omnibus, and drove to the Hotel Albion. The inmates had retired to rest, except the night porter, who seemed a very civil and obliging man. We asked for some refreshment, and were informed that there was only bread and butter accessible, and nothing to drink. In a few minutes mine host made his appearance, eyeing us very suspiciously, but supplied our requirements for the time. We were shown to our bed-rooms, which were large, commodious, and comfortable.

The morning after proving sunny, we partook of an excellent breakfast, and engaged a voyageur, and set out in quest of camera subjects. St. Ouen was the first selected—a magnificent Gothic structure, which was commenced in 1318, was twenty-one years building, and was not completed till the beginning of the sixteenth century. This church is one of the finest specimens of Gothic architecture I ever beheld. The summit of the tower is crown-shaped. The ornamentation is exquisitely beautiful, with two towers at the western end, and of very chaste design. The porches or doorways are ornamented with numerous stone sculptures. The proportions and harmony of the whole exterior of so large a building are wonderful, every part richly ornamented and strictly in keeping with pure Gothic. Our admiration was unbounded; but if I dare to suggest a fault, it was that of ornamentation. The limited space for exposing on the south-east side placed us in a difficulty, but my friend got permission for us to place our camera in a window opposite, but as I had only a long-focus doublet at my disposal, I could only take parts, but my friend having a short-focus wide angle doublet, was enabled to get the whole on a 15 by 12 plate. On entering the interior, a thrill of awe and veneration came over me on beholding such a scene of solemn grandeur. The immensity of the building, and of such fine proportions, illuminated by numbers of stained glass windows, three at the east, and one of matchless beauty, the

colours gradually blending with such perfect harmony, render it impossible to describe with the pen; it must be seen to be properly appreciated. There are numbers of very fine windows deserving of notice, also a few paintings; there is also a very fine pulpit of exquisite design and workmanship. To describe this very beautiful church would require a volume to itself to do it justice.

We next visited the venerable Cathedral, a fine relic of Mediæval times, but so surrounded with houses, and the space in front so limited, that it was impossible to get good views. The first Cathedral was struck with the electric fluid in 1117, and in 1200 was destroyed by fire. Jean Sans-Terre, Duke of Normandy and King of England, assigned funds for the reconstruction of the edifice. This immense building, such as we see it at the present day, is the work of several centuries. The fine bas-reliefs in the porches are very much decayed and otherwise injured. The south tower is a very fine piece of work, its height being 230 feet, and it is named the Butter Tower, or Tour de Beurre, because it was erected with the alms of the faithful, who afterwards obtained leave to eat butter in Lent. The whole of the exterior of this old church is most interesting, and of immense size (about 450 English feet in length), and the solemn grandeur is enhanced by the numerous stained glass windows which were, both in design and colour, in perfect harmony. There are twenty-five chapels in the circumference of the Cathedral, wherein are also some good paintings and sculpture, all full of historical interest to the lovers of the antique.

Leaving this old relic, we next visited St. Marlon, another relic of the fifteenth century, and equally interesting, but so surrounded with houses as to make it impossible to take photographs without a number of common shops so close as to spoil it as a picture. The interior is very fine, and will stand favourable comparison with the two preceding ones.

The Palais de Justice is a fine Gothic structure, highly ornamented with all that the architecture of the times possessed in splendour and delicacy. The angular pillars of the piers are covered with canopied statues or small steeples. There are numerous ornaments which surround the windows, and the roofs are all of very elegant design. There is an octangular turret in the middle of the facade. Altogether, the building has a very imposing appearance, but is unfortunately so surrounded with houses and shops that it makes it very difficult to photograph; but we exposed a few plates on the best positions we could get.

Returning to the hotel, we refreshed ourselves, and turned out for exploring. We engaged a voyageur, and started for the heights above Rouen to the new Cemetery on the Hill des Sapines. The chapel is built on the highest part of the hill, the situation being very well suited for the purpose; but on coming to the crest of the hill, a most splendid bird's-eye view picture of Rouen bursts on our view. The Seine runs through, with tall, dark popular trees reflecting their stately forms in the water. There are also groups of building in great variety, mingled with the foliage of numerous fruit and other trees, the distant parts of the town receding into the misty distance. On looking at the beautiful scene before us, we exclaimed, "How grand!" This was the finest panoramic view we saw during our trip. There were several tall chimneys sending forth clouds of smoke, also the iron horse whirling through this fine picture. The beautiful will in course of time have to give place to the useful as the resources of the country are developed.

## ON THE MANUFACTURE OF LIMES FOR THE LANTERN.

BY M. NOTON.\*

This is not a new subject. The most recent information we have upon it is in a communication from Dr. Nicol, of Edinburgh, published in *The British Journal of Photography*, No. 703, page 507.

\* Read before the Manchester Photographic Society.

The instructions therein given, backed by a recommendation of the Editors, and also a famine of limes at home, induced me to try to make a batch. All who use the lime light will admit that it would be a capital thing to be able to keep a stock of limes any length of time without spoiling, and ready for use at long intervals.

Having the requisite materials I took four parts precipitated chalk, and one part of ponderous carbonate of magnesia, both in fine powder, and rubbed them together well in a mortar so as to mix them intimately. Some strong gum water was added, which was not fresh. By this a paste was made. In attempting to roll it into the form of a roller, I certainly managed to do it, but it soon had a flat side. I had used too much gum water, and so made the paste too soft. This was rather a weak point, but it proved the advantage to be gained in knowledge by working a thing out by direct experiment, as I shall show.

Another quantity of chalk and magnesia was mixed, and combined with the paste till it was so dry it would not roll into a long cylinder; this was the other extreme. Some more dry powder was added, till I made the mixture a little dryer than the mixture of chloride of potash and manganese I use for making my oxygen plugs. I soon saw my best plan would be to treat this white mixture in the same way as serve the black one—that is, to ram it into the oxygen-plug mould tube, and make the cylinders that way.

This I did, and it answered so well that I soon used up all the mixture; but there was at present no central hole, and the plugs seemed rather too fragile to stand much handling. They were not so solid as they might or should be; they put me in mind of a brick made of nearly dry clay. I was suspicious of them. They were put aside to dry, slowly first for a day or so, and then transferred to the top shelf of the oven; when nearly dry it was easy to drill holes through them, but they were weak in solidity, and easily broken. Under fire they gave an excellent light, but they gave way, and cracked by the heat where the seams were. More solidity was indispensable, and must be had. The light was encouraging.

Next day another quantity of chalk and magnesia was mixed with fresh gum water, and tempered to a proper state of moisture. A temporary screw-press was rigged up and used. The cylinders made now were without those irregular and unsound layers; they were much more satisfactory up to that point. When partly dried they were drilled, and put into the oven to dry completely as before. Exposed to the oxyhydrogen flame they give a very good light, and do not break down as the others did.

If would be a still greater improvement if the cylinders were made still harder, as they pit more than the caustic limes do; at least I think so. The simple remedy is merely more pressure longer continued.

As to the fall of the limes after exposure, I do not see how they can escape going the way all good limes go. The heat makes the lime caustic, and it is sure to absorb moisture by contact with the atmosphere afterwards. At all events, it is satisfactory to know we can get a good light, and, I think, a better light, for enlargements from the magnesia in them; but time has to prove this.

Since writing the above I have made another batch of plugs; these have been compressed upwards as well as downwards at the same time, and are much better than any of the former ones. Two ounces of chalk and half-an-ounce of magnesia, with two teaspoonsful of gum water, make seven plugs, each one and a-half inch long by thirteen-twentieths of an inch diameter. The quantity of moisture used in them is very small, and they are soon dry.

A larger diameter of cylinder would be an improvement, and discs or cakes may be made to any particular size.

Not having any other moulds, I have been obliged to be content with bringing this small contribution for the information of the members of the Manchester Photographic Society, entirely disclaiming all thoughts of originality.



## ON THE SCIOPTICON FOR ENLARGING.

BY A. BROTHERS, F.R.A.S.\*

AN artificial light suitable for enlarging photographs has long been a desideratum amongst photographers. The oxyhydrogen light is used successfully; but the trouble of making the gases has always been a serious inconvenience. The electric light is, perhaps, the most suitable; but the inconvenience attending its use is greater than in any other kind of artificial light, and tends to restrict its application in photography.

The magnesium light at one time promised to be of the greatest service to photographers, and it is, no doubt, one of the simplest forms of artificial light. There are objections to its use, and chiefly that of the expense of the magnesium and the necessary apparatus; the brilliancy of the light is only surpassed by the electric light. The magnesium light has this advantage over all other kinds, that it is very portable, and can be used in cases—such as the illumination of interiors—when no other artificial light could so conveniently be used. It is also very useful in portraiture, as some of the most artistic effects may be obtained by its use.

But I am chiefly concerned this evening in directing your attention to a new form of apparatus for enlarging. The cost of the apparatus has hitherto been the chief objection to the use of any kind of artificial light for enlarging photographs; but this objection can be said no longer to exist, as the sciopticon will be found to be one of the cheapest and handiest of instruments yet introduced. You have all seen what this little instrument will do when used as a magic lantern. I have now the pleasure to exhibit two enlargements made with it.

It is unnecessary to describe the proper arrangements for working an enlarged negative, as every one here must be fully cognisant of all that is required. I have only to add that the exposure was one minute; and at this season of the year—in the ordinary light of a December day—the exposure would have been about the same.

## NOTES ON PHOTO-COLLOTYPE PRINTING.

BY CAPTAIN J. WATERHOUSE, ASSISTANT SURVEYOR-GENERAL OF INDIA.†

IN continuation of my former paper on this subject, read before the Society in June last, I have to communicate some additional notes regarding the process which may be of interest.

*Use of citric acid as a clearing agent.*—In my former paper I gave a list of substances that seemed to have a clearing action on photo-collotype films. As citric acid appeared to be in some respects the most likely to give good results, I have tried it on several occasions, and found it most efficient for clearing up a dirty plate, and putting it into good printing condition, without doing any injury to the surface of the film. It seems to possess in itself the useful properties of cyanide of potassium and nitric acid in freeing the surface from greasy scum, and at the same time making the lines take the ink well. I have not yet settled the best strength of the acid, but have generally used it at about 20 per cent. The accompanying specimens will give an idea of its effect. At present it has only been tried for line-work, in which the absolute cleanness of the ground is essential to satisfactory results; but it would probably also be found of service in printing half-tone subjects.

In some cases it is possible that lemon-juice might be

substituted for the more expensive citric acid; but I have not yet tried it.

*Transferring the negative on to the sensitive printing plate.*—In copying maps or other fine-line subjects, it is impossible to obtain good results unless the negative and the surface of the printing plate are in absolutely perfect contact; and although sufficiently good contact may sometimes be obtained by merely placing the two plates together in the ordinary way, it is by no means a certainty, on account of the difficulty of avoiding slight inequalities on the surface of the printing film or the negative; and after many failures from this cause, especially with transferred negatives, an attempt was made to ascertain whether it would not be possible to transfer the negative on to the printing plate, so that it might be in the most perfect contact with it during the exposure to light, and afterwards be removed without damage, and be fit for use again. After several trials, in which the only difficulty experienced was in the removal of the thin collodion films after exposure, the following method was found to give satisfactory results.

The negative is prepared for transferring by coating with india-rubber solution and transfer collodion in the usual way. The sensitized and dried gelatine surface of the printing plate is covered with an extremely thin coating of wax dissolved in turpentine or benzole, applied in the same manner as in waxing glass plates, from which a gelatine film is to be stripped. The plate is then placed in a dish containing sufficient strong spirit of wine to cover it. The thin negative film, having been removed from its glass support, is laid down upon the gelatine surface in its proper position; the plate is then removed from the spirit, and the collodion film, having been pressed into close contact with the gelatine by means of the squeegee, is covered with a few thicknesses of blotting-paper under a thick glass plate, and allowed to dry. When dry, any stopping out that may be necessary can easily be done on the negative, and the plate is ready for exposure. The collodion tissue may be removed immediately after exposure to light, or after sunning. If the gelatine surface is well coated with wax, and the negative tissue tolerably tough, there is no difficulty in removing the film, which may then be laid aside between sheets of blotting-paper for future use. Should the film tear or be difficult to remove, it should be dissolved off at once with ether or other solvent; otherwise, if left to soak in water, there will be a continuing action of light in the parts protected by the film, so that they will print darker than the other parts of the plate, and spoil the impressions.

Before the printing films are put to soak the wax should be removed with a little turpentine.

Negative films strengthened with a coating of gelatine may also be transferred in the same manner; and in an experiment tried with such a tissue, it was found that there was no difficulty in removing it from the plate, even without the preliminary coating of wax.

The object of effecting the transfer in a bath of spirit of wine is, that neither the gelatine nor the bichromate of potash are dissolved by it. The spirit may be used over and over again.

The same method may be applied very advantageously in processes of photo-lithography and photo-engraving where it is desired to secure the utmost possible sharpness in printing from reversed negatives direct upon the stone or metal plate, which is generally a matter of some difficulty when using glass negatives.

The only objections to the method are the slight extra trouble and expense and the risk of destroying the negative; but in cases where a negative can be replaced if destroyed, these defects are of little moment compared to the advantages gained by being able to secure successful results with comparative certainty.

\* Read before the Manchester Photographic Society.

† Read before the Photographic Society of London.

*Continuating Action of Light.*—In the course of the above experiments I obtained more than once an unexpected confirmation of Captain Abney's observations on the continuing action of light. The negative film having torn whilst being removed after exposure, fragments of it were left on various parts of the plate. It did not occur to me at first to use a solvent, and the plate was left to soak so that the gelatine might be softened and the pieces of film removed. This was done with some difficulty, after a soaking of several hours' duration; and, after a further washing to remove all the remaining bichromate, an impression of the plate was pulled, when it was found that the parts protected by the film from the action of the water printed up quite dark; and though the plate was afterwards dried, and the whole gelatine surface evenly and equally soaked again, the dark stains still remained, showing that they must have been due to a decomposing action set up by light, and continuing after the plate had been removed from the pressure frame.

*Action of Cyanide of Potassium followed by Citric Acid.*—The stains just mentioned were entirely removed from one of the plates by means of cyanide of potassium; but it was found that the detail had suffered also, and could not be printed up. The citric acid solution was then applied, and on pulling another impression the lost details reappeared in all their proper force, but there were no traces of the stain. This affords a good exemplification of the action of these agents, and their value in printing from dirty plates.

*Alteration in Formula.*—I have lately been trying a modification in the formula of the tanno-gelatine composition used for the printing plates, and it now stands as follows:—

Gelatine	...	...	...	...	30 parts
Albumen	...	...	...	...	30 "
Tannin	...	...	...	...	1 part
Water	...	...	...	...	240 parts

The addition of albumen seems to be advantageous in rendering the film tough, and making it more adherent to the glass.

The new composition seems to give better results for half-tone subjects than my first formula, while it is equally good for line-work.

#### M. DE CONSTANT ON DRY PLATES.\*

*Drying the Plates.*—In general, the plates to be dried are put into a closed box, in a corner of the dark room, and a warm water bottle is put inside to assist the desiccation. There are, however, several elements of danger in this plan of proceeding, such as:

1. If one is not careful to change once or twice the blotting-paper upon which the plate stands, there is formed at the foot of each glass an accumulation of liquid more or less contaminated by the paper, and this is drawn up again to the surface of the plate, which is almost dry, producing spots and blemishes of various kinds, generally elliptic in form, which blacken on the development of the plate, and damage the cliché.
2. The source of heat introduced into a box of limited dimensions being very close to the glass causes the desiccation of the plates to proceed irregularly.
3. The box being closed, the moisture which disengages from the plates in drying remains imprisoned, and, joined to that accumulating in the box when placed on the ground, prevents the plates from becoming completely dry.
4. Finally, a closed box, especially if it is situated on the

floor, always preserves in its interior a temperature sensibly different to that of the room, so that when the plates are put into the dark slide, the difference in the temperature of the atmosphere produces upon the plate a vapour scarcely visible to the eye, but which is not less persistent and dangerous, for if the plate is put into the camera in this state, the vapour enclosed will be maintained, and will cause, as I have often remarked, very great insensitiveness, the reason of which it is difficult to trace.

To remedy all these inconveniences which long experience has caused me to become acquainted with, I have adopted the arrangement which I will now describe.

The plates, put on end, as I have said, upon blotting-paper to drain after the preservative has been applied, is next placed in a special cupboard, where it reposes upon a support constructed simply of a stick cut to an acute angle. Lightly supported by one of the upper angles against the end of the cupboard, the plate is sustained at the back by long pegs projecting from the wall of the cupboard at four inches apart. The plate therefore remains perfectly isolated, it having air space on all sides, and the moisture which is at the foot of the plate upon the angular stick is in no way arrested, and may drop or be absorbed by the blotting-paper at the bottom, which is replaced from time to time.

When the cupboard is closed (all the plates being properly arranged), a practical shutter in the door is opened, the aperture of which is covered with yellow tannin to prevent the ingress of light. This opening allows for the exit of the moisture, and establishes good equilibrium with the atmosphere of the room, which it is well to warm moderately if the weather is moist or cold. The plates are thus dried gently, uniformly, and completely, and no vexatious change takes place when they are put into the dark slide. Nevertheless, a plate should never be exposed in the camera before an attentive examination of the film has taken place, which should be regarded by reflected light. If the plate appears brilliant like glass, and, viewed as a transparency, it does not exhibit spots, nor marble markings, nor inequalities, one may have confidence in it, and put it into the dark slide. If, however, it has a cloudy aspect, it should be put face to face with a hot iron, or held near a stove until this appearance vanishes, and its brilliancy reappears.

I have already said that dry plates possess the inconvenience of becoming transparent, so that when the light passes, an effect termed blurring is produced, to remedy which it is usual to back the plate with some colour of a sombre nature, a most laborious proceeding.

I believe that with albumen in conjunction with the caramel it is possible to prevent the reflections in question, taking care to apply against the back of the glass in the frame a sheet of matt black paper.

As to the keeping qualities of the dry plates prepared by this process, I think they will be found excellent, although I have not much practical experience on this point beyond the period of a month; but I cannot repeat too often that their preservation in good condition depends very much upon the preparation, as also upon the mode of desiccation adopted.

(To be continued.)

ONE PRINT FROM TWO NEGATIVES.—Mr. Kirk, the patentee in the United States of a method of producing a negative at the front and at the back of the plate in one exposure, with a view to produce soft prints, is offering to American photographers the right to use his patent process free of charge for six months. If at the expiration of that time they wish to continue its use, a sum of fifty dollars, or round numbers £10, will be charged for the license to use the method.

\* Continued from page 609.



# The Photographic News.

Vol. XVIII, No. 800.—JANUARY 2, 1874.

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## THE PAST YEAR.

In glancing at the photographic history of the past year, it is satisfactory to find that, besides the somewhat intangible, however real, progress which may be comprised in general improvement, we have two or three very definite gains during the year, both in knowledge and power, and of a very practical character. For many years the photographer's knowledge of the chemical action of light has advanced but little. In the early years of the art the late Sir John Herschel arrived at the conclusion that the whole of the solar rays possessed actinic power, instead of a portion only, a conclusion confirmed by the research of some other physicists at the time. The recent interesting investigations of Dr. Draper, recorded in our last volume, have more definitely established this view, and the still more important discovery of Dr. Vogel, whereby a film of bromide of silver may be made as sensitive to the yellow ray as to blue, at once illustrates and gives a practical value to the conclusion to which we have referred. The fresh ground thus broken, in relation to actino-chemistry, presents ample field for interesting experiment, and a promise of considerably extended range in photographic power.

Few discoveries, of a purely practical kind, possess more importance than that published by Col. Stuart Wortley, as to the action of an enormously powerful alkaline developer. In the first steps in alkaline development by Mr. Leahy, ammonia alone was found to act as a developer; but the tendency of experiment since that time has been to use the alkali very sparingly as an adjunct to pyrogallie acid. Col. Wortley has discovered, however, that an eighty-grain solution of carbonate of ammonia, with a mere trace of pyrogallie acid, may be used with success, and kept perfectly under control. It has long been held by theorists that exposures might be greatly shortened if a method of using various powerful developing agents at hand, without risk of fog, could be devised. This, in relation to certain dry processes, Col. Wortley has done: how far the principle can be extended remains to be ascertained. Mr. R. Manners Gordon finds that this developer, applied to gum-gallic plates, permits an exposure not exceeding that of wet plates in their most sensitive condition. Col. Wortley finds the same rapidity with this developer when applied to his dry emulsion plates; and, in addition, a degree of vigour in the negatives not otherwise attainable without much longer exposure. How far such a developer may succeed with wet plates, we are uncertain; but it seems probable that, with wet bromide of silver films, it should work without difficulty.

With the exception of this important novelty in development, there has been but little change made in dry-plate work. Emulsion processes have received considerable attention, and progress, in securing satisfactory conditions, has been made. A series of instantaneous views by Col. Wortley, taken under all the difficulties of exposure involved in working aboard a yacht in full sail, attest the rapidity which has been attained. Some attention has been given during the past year to the use of gelatine as a vehicle for bromide emulsions. Some years ago a similar attempt was made to employ gelatine as a vehicle for chloride of silver emulsions; but whilst some fine results were obtained, from a variety of practical difficulties, and the absence of any specific advantage, gelatino-chloride of silver did not supersede collodio-chloride of silver. At present it would be premature to predict the future of gelatino-bromide of silver emulsions. Mr. Burgess and others have produced good results by means of formulæ not at present made public; but whether in the main the balance of advantages or difficulties will prevail is uncertain.

In the wet process there has been but little change. Mr. Black's nitric acid bath, and Elbert Anderson's weak baths and highly-salted collodion, have been discussed; but general practice remains unchanged. A moist process for portraiture, in which the preservative is also the developer, has been tried, and, so far as we know from the meagre details yet disclosed, with some success. Col. Wortley informs us that, acting on the suggestion of an article we published some time ago on the restraining powers of viscous substances, he added such a body to an alkaline developer, and applied it to an emulsion plate at the time of preparation. The plate so treated remained without any tendency to reduction until exposed to light, when it was at once initiated, so that development commenced in the camera immediately on commencing exposure, and was gradually completed without further application of a developer. Such a process seems to promise many advantages. The addition of nitrate of baryta to the silver bath, proposed at the South London Society by Mr. Henderson as possessing many advantages, chief of which is the maintenance in solution of iodide of silver, and consequent prevention of pinholes, has received some discussion. It is, undoubtedly, worthy of a trial, as is also the suggestion of Mr. Chisholm, an American photographer, to get rid of pinholes by adding a few drops of hydrochloric acid to the nitrate bath.

The admission to the sensitive surface of a certain amount of diffused light, white or coloured, as an accelerating agent, has received some further attention in this country and in America, and the reports are generally in its favour. Curiously enough, whilst all photographers are anxious for means of securing rapid exposures, this method, which is simple and easy, and is recommended by good credentials, receives but little attention or experiment. It is well worth more consideration.

Silver printing remains unchanged, both in practice and results. The plan proposed in our pages twelve months ago, of preserving the sensitive paper between sheets of bibulous paper which had been previously saturated with a solution of carbonate of soda, has been extensively applied with great success, a modification communicated to our readers by Mr. W. Bedford having been found very useful by many. Absolute stability is still a desideratum. The method of securing permanency by fixing in the dark, and placing each print in a fresh solution of hyposulphite of soda, proposed at the Photographic Society by Dr. Gayer, was suggestive. The tendency of such a proposal was doubtless desirable, and would probably induce renewed care in this direction, even where it did not secure literal adhesion to the advice.

Portraiture has been steadily growing in general excellence; but there has been little of a specially novel kind introduced, especially in this country. On the Continent

and in America efforts to secure softness by some mechanical method, and so to ameliorate the mercilessly sharp rendering of coarse texture or other natural defects, have been very prevalent. The free use of shadow, and the aim to secure transparency in that shadow, which distinguish the style of portraiture recognized as "Rembrandtesque," has been adopted by many portraitists. Modes of securing softened definition have abounded. M. Denier, of St. Petersburg, introduced some pleasing examples of this softened definition, which was said to reduce the necessity for retouching to a minimum, and offered to sell the secret method for a consideration, and photographers have been stimulated to imitate the results. Printing through a medium, in the manner employed by Carl Meinerth, has been tried. The method of printing from two similar negatives, one superposed upon the other, has been again revived, and various modes of securing the negatives have been described in our pages. A printing-frame has been devised by Mr. Jacoby, in America, to permit destroying the contact between the print and the negative during a portion of the printing exposure, so that, being partly impressed whilst in close contact, and so a certain amount of sharp definition obtained, the remaining portion of the printing should be effected without close contact between the print and negative, so that diffused definition should result. Another plan, proposed with a similar object, consists in commencing the exposure of the sensitive plate with a stop to secure sharp definition, and removing the stop during exposure, so as to introduce the spherical aberration due to the use of the full aperture of the lens. These, and some other methods with a similar aim, have been tried abroad, with a greater or less amount of success, and have indicated an extended taste for some modification of the uncompromising literal rendering of lines, freckles, and coarse texture at one time regarded as a technical excellence in photography. As a rule, portraitists in this country object to anything like fuzziness in definition, and these methods have only been received with partial favour by English portraitists.

In few practical operations has greater progress been made than in enlarging processes, and a degree of excellence has been attained hitherto almost unknown. The most successful methods seem to be those in which a perfect transparency is obtained from the negative, and from this transparency a large negative. A little judicious touching at each stage of the operation is singularly valuable in giving a perfect result, with but little risk or necessity of injuring the likeness by over-touching. Mr. Croughton's recent paper gives some valuable hints on the subject.

The production of photo-enamels has progressed during the year, but not largely. The number of photographers producing fine results has increased. As regards excellence of result, little has been left to desire in work already produced; but there is room for more extended practice of this very beautiful and in every way desirable branch of the art.

Permanent printing processes generally have not received much attention. The carbon process is still chiefly confined in practice to the Autotype Company, in whose hands it seems to have attained practical perfection. The late M. Marion introduced two ingenious processes, which were duly described in our columns, but which have not yet been much adopted. Improvements in photo-collography have been also described in our pages from time to time, chiefly by Captain Waterhouse and by Captain Abney. A valuable and novel process, entitled Photopapypotype, has been patented by Captain Abney, and an improved method of producing a photo-lithographic transfer, devised by Mr. Walter Paul, was brought before our readers early in the year. In some photo-mechanical processes a degree of excellence, scarcely falling short of that of silver printing, has been attained; we may name especially some of the photo-collographic processes and the

photo-relief process: a very charming example of the latter will be found in our YEAR-BOOK just issued.

The experiment of producing direct in the camera very large heads, for which Mr. Crawshaw instituted a competition, was so far successful that it will be repeated, a series of similar prizes being already announced by the munificent donor of the last.

Photographic Societies have not undergone much change during the year. None having an active existence have gone out during the year, and no new ones have been initiated. All which have survived their youth appear to be healthy and active. The Photographic Society of London, after some years of struggle, having attained again a flourishing and successful position, is at this moment threatened with some trifling internal commotion, probably of the kind which, in vigorous physical constitutions, is occasionally styled a "healthy eruption," possibly wholesome, rarely pleasant. Some further effort has been made by a few earnest working photographers to establish a Benevolent Society, for the benefit of the unfortunate and needy amongst their body, with, we hope, a prospect of a successful issue.

#### SIMPLE ARTIFICIAL LIGHT FOR TRANSPARENCIES AND ENLARGING.

EVERY facility which makes some branch of photography, whether for pleasure or business, independent of sunlight, during the gloomy months which prevail in this favoured land, must be regarded as an undoubted boon to the photographer. The electric light is cumbersome and costly; the oxyhydrogen light is cumbersome, and not free from risk; the magnesium light is a capital aid, not cumbersome, and for professional purposes not relatively costly, but still sufficiently costly to deter the amateurs and small photographers who may require its aid only under occasional circumstances. For printing transparencies by contact, a gas flame or that of a paraffin lamp is sufficient; but printing transparencies, however interesting, is not an occupation which can last for ever. A light easy to obtain, easy to manage, sufficiently bright to permit of various camera operations, such as reproducing negatives as well as transparencies, either the same size, enlarged, or reduced as may be required, and we have concurrent testimony at the same moment to the value of the same lamp for the purposes in question.

In our YEAR-BOOK, just issued, we refer to the *Sciopticon* as presenting a probable means of producing enlargements with little trouble, and in the same annual we give Dr. Liesegang's experience with Marcey's *Sciopticon*, which is the prototype of that patented by Mr. Woodbury in this country, in this very direction. At the last meeting of the Manchester Photographic Society, Mr. Brothers read a paper on the same subject. The time of exposure was stated to be one minute, and we are further informed that this was about the same time which would have been required by the ordinary daylight of this dull season. The precise amount of enlargement, or the lens and aperture used, are not stated; but these are details which each operator would soon determine for himself by experiment. Some years ago a correspondent gave us some details of successful enlarging operations, conducted with an ordinary hall lamp, burning paraffin, and an ordinary magic lantern. With this arrangement he was enabled to produce transparencies, enlarged from a card size to twelve by ten, with an exposure of seven or eight minutes. As the estimated illuminating power of the *Sciopticon* is three or four times that of an ordinary lantern, a similar result should be produced by the aid of the former by an exposure of little more than two minutes. For producing life-size heads from card negatives, Dr. Liesegang finds the exposure varies from three to five minutes.

The advantages to be gained by the use of an artificial light, as compared to the dull and varying daylight of au



English winter, consist, however, in increased certainty. Nothing is more difficult than to guess the actual value of a dull winter light, modified, as it generally is, by a certain amount of fog or vapour. An artificial light, on the other hand, is constant, and however other conditions may vary, such as amount of enlargement, degree of intensity in the negative, condition of chemicals, the light may be regarded as a fixed quantity. We remember a gentleman, who was engaged in producing enamels, once remarking to us that the most troublesome part of the operation was securing transparencies of the precise quality necessary for a perfect result, which the varying light of winter made almost impossible until he began to use the magnesium light, which reduced exposure to a certainty. It was reduced simply to the burning of so many feet of magnesium ribbon. In like manner, with a lamp like the Sciopticon, the exposure is reduced to the burning for so many seconds of a constant light, which, once ascertained for a given series of conditions, will always remain the same for similar conditions, and the requisite modification may be easily calculated for varying conditions. Hence it seems that for producing collodion transfers, photo-crayons, lantern and stereo transparencies, enamels, enlarged negatives, and such work generally, a boon is promised to photographers which has long been desired. As a paraffin flame, under its best conditions, has, of course, a much more yellow tint than sunlight, there may be room for considerable modification of the character of the sensitive film best suited to such a light, a free use of bromide being probably desirable. But this is a matter for experimental investigation.

The value of the Sciopticon for lantern purposes proper do not require stating here.

#### A RAPID COFFEE AND ALBUMEN PROCESS.

Mr. T. C. Roche describes a dry process, which is, as he states, in skilled hands, as rapid as wet collodion. We condense details from *Anthony's Bulletin*. The plates receive a preliminary coating of dilute albumen, similar to that now commonly used in the wet process. A bromo-iodized collodion and ordinary silver bath are employed. The excited plates, having been well washed under a tap with soft water, are covered with the following preservative, which is suffered to flow well over the plate twice, and then allowed to dry spontaneously:—

The preservative consists of—

White of one egg.	
Water ... ..	1 ounce.
Liquid ammonia ... ..	15 drops.

Beat up well and mix with four ounces of plain coffee solution (one large tablespoonful of Java coffee and five ounces of water), letting it boil well. When cold filter twice."

The author says:

"Expose the same as any good wet plate for plenty of detail, or it would be better for those who are not used to working dry plates to give twice the time. Develop the same day, or keep the plates for two or three days if desired. To develop, wet the surface of the plate well under the tap; then flow on a weak solution of alcohol and water, and drain; then flow on the developing solution No. 1, working it well over the plate; drain back into the developing glass and add No. 2. Now flow the solution on the plate again, and the picture will appear. As soon as all the detail is out, wash the plate well with water; then flow on a solution of—

Acetic acid... ..	1 ounce.
Water ... ..	6 ounces.

Work well on the plate to neutralize the alkaline developer. Wash off, and then strengthen in the usual way with acid pyro. and silver. The more silver used the harder the negative will be. Fix in hypo.

#### "Alkaline Developer.

No. 1. Pyrogallie acid...	96 grains.
Alcohol ... ..	1 ounce.
No. 2. Water ... ..	3½ "
Aqua am. ... ..	½ "
Bromide potass ... ..	40 grains.

Dissolve the bromide first in water, and then add the ammonia.

"To develop, take one ounce of water, adding 15 drops of No. 1; flow on the plate as above; then pour back into the glass and add 50 drops of No. 2. Pour on again, and the picture will flash out immediately."

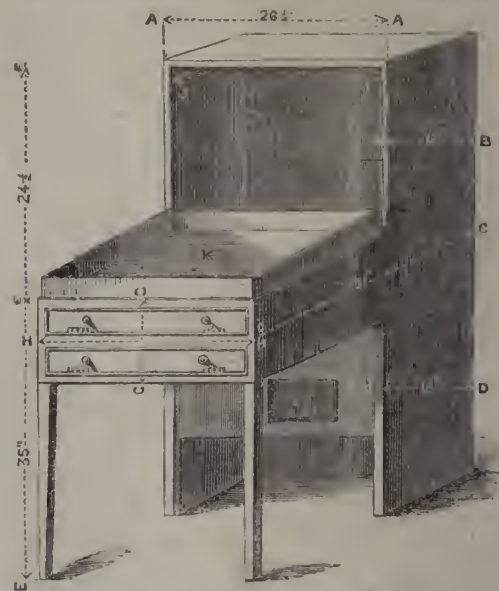
The author gives an additional formula for alkaline developer, which may be used if the operator prefer. Whatever alkaline developer be used, he prefers stopping as soon as detail appears, and strengthening with pyro. and silver.

#### SENSITIZING, DRYING, AND FUMING PRESS.

BY J. G. TUNNY.

IN my holiday rambles last summer through Scotland and England, and looking in here and there on my professional friends, I was surprised to find so many still wasting time and material by sensitizing their paper in quarter sheets. The want of convenience for sensitizing the full size of sheet was the general reason for still adhering to the primitive mode.

The annexed drawing shows a press I have devised for



successfully overcoming many of the inconveniences arising from want of room for carrying on the preparation of the sensitive paper. The press is made of 3/4-inch yellow pine, the entire height from E to F being 59 1/2 inches, and the depth (C to C') 31 inches. From A to A is 26 1/2 inches, having at B to B and D to D a depth of 12 inches. I I are two fillets upon which the baths lie for the suspension of the paper. The laths should be about 1 inch by 1/2 inch, with two small tapered knobs about 2 inches from each end to keep the paper from coming into contact while drying. Into each lath put two silver pins about 20 inches apart (a little bit of silver wire brought to a point by a file answers the purpose best, but let the wires have a slight bend upward, to prevent the paper falling off); the bath K, lying right in front of the recess. The paper, when lifted and drawn over the glass rod in front, is attached to the lath lying on the fillet I I. Another sheet is laid down; and when ready for lifting, push the first lath back and place another lath for the suspension of the second sheet, and so on

until the recess is filled, which will contain seven sheets of paper. About 9 inches below the paper there is a centre bottom of sheet iron perforated round the edges, under which Bunsen burner L is lighted, and in about ten minutes the seven sheets are dry. The Bunsen being lowered to the lowest possible flame, a saucer containing about  $\frac{1}{2}$  ounce of strong liquid ammonia is placed upon the centre of the sheet iron bottom, care being taken that all the sheets are free from each other, and a door, around whose edges a double thickness of velvet has been glued, is tightly pressed in front of the paper, entirely preventing the escape of the ammonia vapour; and the fuming takes about ten minutes, more or less, according to the strength of the liquid.

The bath is made of yellow pine dovetailed and put together with marine glue: the bottom is fitted in like a panel. When the wood is thoroughly dry, let it be coated with a solution of paraffine, dissolving about 3 ounces in 4 ounces of benzole, repeat this coating three or four times, both outside and inside, and the bath will be found to be light, and much easier to handle than those of glass or Wedgwood ware. Beneath where the bath stands there are two drawers with flap door, each capable of holding a ream of paper, and a nice-fitting lid prevents the bath getting dust; but it is best to return the solution to a Winchester bottle kept always filled to the neck. This prevents the necessity of filtering, and is consequently a great saving.

### THE LIMIT OF RETOUCHING.

BY ROBERT TAULKNER.

THE legitimate plea for retouching is based upon the limited capacity of photography. Inasmuch as the beautiful, luminous, and warm shadows we see in nature are reproduced by photography as blacks, it is perfectly legitimate by means of retouching to veil this blackness; the high lights may be strengthened, and the spots, freckles, and defects of manipulation may be softened or removed; beyond this is a violation of truth.

At the last exhibition of the Photographic Society many photographs and enlargements might have been pointed out in which all the endless variety of texture, form, light and shadow, to be found in nature were ruthlessly destroyed; all the pulp and suppleness of flesh removed, all character and expression blotted out, until the effect of a soulless China mask had been obtained.

An important enlargement, a lady's portrait, was especially untruthful, the greater part of the face being in shadow; that portion which was light was placed in contact with a dark background, and appeared as hard and unvaried as a white line ruled by machinery on a black ground would be. It should be remembered that under these circumstances photography would always give a much harder outline than is found in nature; and, therefore, the utmost care should be taken to preserve all those indications of form of which the outline of a face is full, also refined and subtle, and each having its light and shadow. Even spots and freckles may be allowed to remain, because they would in all probability help to round off the outlines; and the background ought certainly to be varied and lighter where it comes in contact with the face. Often in the works of great painters a double outline may be traced, made by the dark transparent colour used for finishing the background being taken up to the outline only here and there; and in some places it is left by a crisp touch, which gives great spirit and animation. It must be observed here that there is no such thing as an outline in nature; it is merely an expression. To do as little as possible, and to know where to leave off, ought to be the aim and study of the retoucher. He is the prince of artists and of men who knows when his work is done. On this Appelles founded his superiority over his contemporaries, &c., &c., *Fuseli*, 130th *Aphorism*. The sacrifice of the essentials of art for its refinements and puerilities has, in all ages, caused the destruction of schools of painting; and excessive retouching will,

in like manner, destroy all the value of photography. "Truth above all things," should be the motto of all followers of photography, for the art is valuable only so far as it is truthful. As a noble example of untouched photography, I would draw attention to the portrait of Sir Henry Taylor, by Mrs. Cameron. In this picture the man lives and thinks. It is great in style and unconventional in treatment, and possesses the rare quality of action in repose; the modelling is excellent; every line of thought and suffering is well expressed, but not obtrusively so. Place the negative from which this picture was produced in the hands of a tasteless, soulless retoucher, and to what a vapid, expressionless thing he would reduce it, especially if instructed to give it the *Berlin Finish*! What a priceless possession an untouched photograph of Shakespeare would be! How unsatisfactory and tantalising a retouched one! Again: how precious to the bereaved is the faithful image of a lost friend, or a dear relative; remove expression, character, or even peculiarity, and how little comfort such a remembrance would bring! The mourning survivor looks upon the shadowed picture of the beloved one; he searches for the familiar lines of thought or age, the marked and decided feature, the pronounced characteristic. Too often he seeks in vain—all is smooth and pretty, meaningless and vapid; for the vigorous portrait painted by the honest sunlight has been submitted to the tender mercies of the Retoucher!

### FRENCH CORRESPONDENCE.

THE readers of the PHOTOGRAPHIC NEWS most likely remember the plan adopted by M. Melchion, a skilful photographer of Marseilles, for reducing the period of exposure which I mentioned in one of my recent letters. M. Melchion, after having placed the slide containing the sensitive plate in the camera, covers the front of the lens with a piece of ground glass, the rough surface towards the lens, and exposes the plate for one or two seconds, according to the nature of the light. This done he takes away the ground glass and proceeds to take a photograph of the object in the ordinary manner; only, thanks to the impression already made by the light upon the film, this exposure need only be of very brief duration.

Many photographers have essayed this very simple method, which succeeds very well, supposing the dark slide used is of a suitable nature. To overcome any difficulty that may arise in this respect, an experimenter has suggested a modification of M. Melchion's mode of proceeding. He has two caps, the one of ground glass surrounded with a zinc or copper ring to fit on to the lens, the other, to fit upon this, of cardboard, which is easily fitted and unfitted. The mode of operating is to pose the model, then cover up the lens with the double cap, put in the dark slide, open the shutter, take off the opaque cap for a second or two so as to give a little exposure through the ground glass, cover the lens again, and then take off the double cap, exposing the plate to the object as long as may be deemed necessary, and then finally capping the lens again. In this way it is possible, as M. Melchion explains, to reduce materially the period of exposure in portrait photography.

Another correspondent communicates to me a modification which he has recently made to the wet collodio-bromide process of Mr. Sutton. The film, covered with a hygroscopic preservative, will keep in a moist state during the whole of the day. The film remains very sensitive, and the *cliches* are of a most delicate nature. Finding, however, the developers proposed to be slow, my correspondent proceeds in the manner following:

After the plate has been silvered in a ten per cent. bath, and has been exposed and well washed, it is allowed to drain for a minute, and is then flooded with, or put into a four per cent. solution of silver, before the developer is applied. It remains in this silver bath for about half a minute, and the image is then simply developed with sulphate of iron.



The image under these circumstances appears at once, and gradually progresses. If the bath is stronger, the blacks become too intense and opaque, and yield too hard negatives afterwards.

A little while back I expressed the conviction that the production of silver prints had almost run its course, and that the introduction of permanent printing, universally, was rapidly approaching. Every day appears to confirm this opinion. On the Boulevards and in the Rue Rivoli, the public may be seen standing around the printsellers' shops, attracted by two figures of a highly artistic character exposed in the windows. The one represents Lorraine, the other Alsace, and they are two peasant girls in their simple national costume, the charm of the models being heightened by their elegant and sympathetic expression. The pictures are the production of M. Braun, of Dornach, who is distinguished as one of the most happy composers of art studies.

These two studies, of which several thousand copies have been sold, are printed in carbon. On visiting the establishment of MM. Pierson et Braun fils, I was able to inspect a perfect gallery of photographs all of which are likewise produced in permanent pigments. The firm, or I should say rather, the manufactory, at Dornach, sends to the Paris house supplies of pigmented paper, and this is sensitized as required at Paris, the sheets being of colossal dimensions. Negatives measuring ninety centimetres in length are printed, as shown at the last meeting of the French Photographic Society. These large reproductions of paintings in the gallery of the Louvre are not the only objects produced by M. Braun. He has reproduced them on a small scale also, and in this way has formed a most interesting collection. He also makes reproductions upon canvas, the images being transferred to that material when printed. These outlines, which could not be produced so well and faithfully by any other means, are confided to competent artists, and *fac similes* of the original paintings in the Louvre are prepared. Already a large number of such copies have been painted in this way, and a large number are now on show at the gallery of MM. Pierson et Braun, forming, as it were, the museum of the Louvre in miniature. On the walls there are to be found specimens of every school and every master, and how much the collection has already cost can scarcely be estimated. Payment has already been made to painters to the amount of 60,000 francs in producing these works, but as purchasers have not been wanting ever since the establishment has been opened, there can be no doubt that M. Braun will very speedily get back his money.

As a matter of course a process which is so suitable for the reproduction of paintings is also equally applicable to portraiture taken from life. The same mode of production is followed in the case of all painted portraits that issue from the firm of which we speak. Very soon we shall have no other portraits printed but in permanent pigment. I have already had an opportunity of inspecting the arrangements made by MM. Pierson et Braun with a view to overcoming the difficulties in printing portrait negatives on a large scale. The example set by these gentlemen will be followed without doubt, and the revolution will not be long in spreading to other studios.

ERNEST LACAN.

## EXPERIENCES OF A PORTRAIT PHOTOGRAPHER.

BY J. R. SAWYER.

IN laying before the readers of the *Photographic News* the following brief notes, I do not imagine that I am telling anything but a "thrice told tale," and that those readers who expect to find novelty in what I am now writing will probably be disappointed; however, as no one contemplates the same subject from absolutely the same point of view, I am tempted, in response to the invitation of the Editor, to jot down a few notes of what I remember in the course of a photographic career of twenty years' duration.

When I began photography in '53, it was not at all such plain sailing as it is at present; it was my lot to pitch in just at the time when Daguerrotype was giving way to collodion positives; but those silvered plates—what a nuisance they were! what wheeling and buffing and polishing they used to take, and how a *black* polish was insisted on, and how awfully difficult to get! Then the cunning contrivances to support these precious plates, first over vapour of iodine, then over ditto of bromine, and how they had to be a straw colour at one stage and a blue colour at another, and some other colour ultimately, but what I quite forget. And then the dreadfully long exposures in the camera, and the development with hot mercury, and the *sel d'or*, and the fixing, and the washing, and the drying off with distilled water. Yes, we who now-a-days simply slip a piece of glass covered with collodion (all ready for use prepared by chemists who make it their business) into a bath of nitrate of silver, then expose and develop, may think our stars that Scott Archer appeared and gave to the world, without fee or reward, his grand invention of photographic collodion. I just knew Archer, a most modest and unassuming man; he died very shortly after, and in comparative poverty, and thousands have profited by his invention, and millions of hearts throughout the wide world have been gladdened by the vast extension of an art which his invention alone rendered possible. Scarcely if any man deserves honour and acknowledgment from those he has benefited, it is Scott Archer.

In those days there were some great names who did not think it beneath them to illumine from their stores of scientific lore the subject of photography. There was Hunt, Maxwell Lyte, Spiller and Crooke (in partnership) Dr. Diamond, Becquerel, and other foreign savants, and on taking up and looking at the *Photographic Journal* of those days I am not quite certain that the photographic journals of the present day are more interesting, more scientific, or more useful.

However, such were the times when I first dabbled in photography. Having had a quasi-scientific education, and preparing to start in business with a miscellaneous assortment of optical, philosophical, and surgical appliances, I betook myself to an old city in the eastern counties, the most ramshackle tumble-down old shop and premises you ever saw, I set to work to display my lenses, microscopes, thermometers, and various other "ometers," tooth forceps, dissecting knives, surgical pocket cases, and a variety of bright, awful-looking instruments which seemed to strike awe into the many gazers—such terror, indeed, that few, if any, ever ventured into the shop. Things looked gloomy, and days and weeks passed without anything coming into the exchequer. In this quandary I decided to put a camera and lens together, and see if some practical use could not be made of photography; so I went in for collodion positives, there was a small room at the back of the shop lighted by a skylight, and as in those days skylights were considered absolutely indispensable to the practice of photography, I concluded that I was fortunate in the possession of such a necessary. A little cupboard about three feet square formed my operating room, and this little den was the scene of messes and failures innumerable. The members of my household were almost worried out of their lives by my incessant demands upon them for sittings; my neighbours also were placed under frequent requisition to the same end. This was all very well before the charm of novelty wore off, but when that stage arrived, as it very soon did, my photography was voted a positive nuisance. However, after a heart-breaking time of it, things gradually got better. A platform was erected to elevate the "patient" nearer to the light; a canopy hung, to stop the vertical rays beating down upon the head of the unfortunate sitter; a large white sheet, depending from one side and in a curve to the floor, modified the hard shadows produced by the excessive top light; a background of neatly joined brown paper took the place of the old blauket previously



in use, and by slow degrees sufficiently good results were obtained to permit of the exhibition of a show frame of specimens, and inviting the public not to lose the opportunity of securing their portraits, done (as I then believed) in an artistic manner.

Since that time changes innumerable have taken place. On two occasions I nearly caused the downfall of the rickety concern by constructing improved photographic studios. Once I got into a law suit with a neighbour, because I interfered with his "ancient lights," and only got out of the scrape by paying a heavy sum for costs. Misadventures with gas, fire, and water were of frequent occurrence, until at last an intimation reached me that the Corporation had decided to widen and improve our crooked old street, and for that purpose it would be necessary to take down the tumble-down premises I occupied. Weeks and months of negotiation followed, which were ultimately brought to a conclusion by the City Surveyor, rather rashly, pulling down the buildings immediately adjoining mine, the consequence being to very nearly bring down my old place with a run. Soon after this I obtained the grant of a suitable piece of ground a few yards lower down, and proceeded to build an optical, philosophical, and photographic establishment, in a style which the local newspapers, on its completion, were pleased to say, made it "an ornament to the city."

The studio in this building is about five-and-twenty feet in length, by nearly the same in width. It has one large skylight, sloping down to within about five feet of the floor; in addition, it has one sidelight placed in the wall opposite the skylight, and coming very low down. The studio occupies the whole of the top storey, so that the operating room has to be on the floor below, which contains in addition a dressing-room, studio for colouring, and a room for plate cleaning and varnishing.

(To be continued.)

## Correspondence.

### LIFE-SIZE PORTRAITS, DIRECT AND ENLARGED.

SIR,—Please allow me a few words on Mr. Croughton's paper read before the South London Society, and concluded in your last. In the comparison between large portraits taken direct, and enlarged from small ones, the writer states that a most serious and, as he infers, almost insuperable difficulty in taking (say) eighteen-inch pictures direct is from the extreme exposure required. If such be his experience it cannot have been with the use of the most improved appliances. When in scientific matters reference is made to what can be done, it is of course understood that the operator avails himself of the latest knowledge on the subject. With a studio properly lighted the average exposure with a 7D lens of Dallmeyer for 20-inch plates does not exceed forty seconds for ten months of the year. In Mr. Slingsby's studio, on the 12th of January last year, with a very moderate light, and during an intense frost, I saw some of his finest work done in thirty-five seconds, and fully exposed. At the same time card vignettes with  $\frac{3}{4}$ -inch heads and 2B lens required ten seconds. This was not exceptional working, and is on the same ratio as in my own studio, which is a replica of Mr. Slingsby's. Mr. Robinson works fully as rapidly. I fear Mr. Croughton has seen these things done under adverse circumstances, forgetting or unaware that the introduction of the D lenses, with which almost all the fine, large direct work in the late exhibition were done, and corresponding increase in rapidity by improved building and lighting, have within the last four years revolutionized possibilities in the successful execution of large work. At the same time many of the very finest small photographs in England are done in slow lights; but of course if thirty seconds or more have to be given for card-size, a very long exposure must be given for 20-inch plates; but we must not assume this to be anything else than the fault of the studio. It is certainly not an inherent difficulty in the thing itself. I take exception utterly to the statement that a collodion transparency is best if you wish to print direct from the enlarged plate—either a dry plate or carbon tissue is much better. For small enlargements, to be issued as such without much working on, collodion transfers quite supersede a print from an enlarged negative, yielding a far larger number of intermediate

tones, whilst for the painter's purposes, either in oils or water colours, no better medium can be desired. I very well know that specimens from fine negatives can readily be produced as Mr. Croughton indicates, but for actual professional work I can say, as one who has done as many enlargements as most people, that I never expect to see anything so produced to equal the work now being daily produced by leading photographers with suitable large lenses and properly arranged light and chemicals. With regard to the light, I can only say that no man having worked with a quick light straightway desireth a slow, for, he saith, the quick is better.—Very respectfully. SAMUEL FRY.

### THE CRAWSHAY COMPETITION.

SIR,—I see it announced that the direct heads in next year's competition are to be in pictures twenty by sixteen and fifteen by twelve. I would be obliged if you can state whether or not the above is the measurement allowed for the print, and what margin is to be allowed for the mount and frame.—I am, &c.,

29th December, 1873.

INTENDING COMPETITOR.

[The dimensions mentioned refer to the picture so far as that legitimately comprises head, bust, and requisite background. In short, it is intended that the portrait shall be taken fairly on a plate not less than the size indicated, twenty by sixteen, or fifteen by twelve. The margin, mounting, &c., are left to the taste of the competitor. Some, for instance, at the last competition had white mounts and gold frame; some gold mounts and black frame; some had a surrounding margin of purple brown photographically printed; but the pictures were of the proper size within that tinted margin.]

EDITOR.

### YELLOW SPOTS.

SIR,—Seeing many of your correspondents writing about those troublesome minute yellow spots, permit me to say, having been similarly afflicted with my prints for some time, and having tried several remedies, but all proved failures, until a friend of mine (who is a chemist) lately told me that the cause of the spots was washing the prints in cold water after being removed from the fixer, which being made with warm water to keep the hypo soluble, and being thus suddenly changed from the warm fixing bath to cold water (which is exceedingly cold at this time of the year), closes up the pores of the paper, and thus keep the hypo, as it were, frozen up in the paper.

I have tried washing the prints after fixing in warm water, and find it a success. The theory of it seems to me to be the warm water readily dissolves the free hypo from the paper, whilst cold water fixes it in the paper. This seems to be, the more feasible, as the spots are more prevalent in winter than in summer, when the water is warmer.—Yours truly,

Truro, 17th December, 1873.

FREDK. ARGALL.

## Proceedings of Societies.

### MANCHESTER PHOTOGRAPHIC SOCIETY.

The usual monthly meeting was held at the Memorial Hall, on Thursday evening, the 11th Dec., Mr. W. T. MABLEY, President, in the chair.

The routine business was disposed of, and Mr. I. W. Petty elected a member of the Society.

Mr. A. Brothers exhibited a series of photo-lithographs from Burgman's "Triumphs of Maximilian I." He said that the original wood engravings were on separate sheets of large folio size, and represented a procession; but the photo-lithographs were joined and suspended against the wall of the meeting-room, suggesting the effect of a frieze. The designs are very spirited, and are considered to be the very finest examples of the art of wood-engraving at its best period—the sixteenth century. The series comprised sixty-eight sheets—one half of the work. The reproductions have been made for the Holbein Society.

Mr. Brothers then read a short paper "On the Sciopticon for Enlarging" (see page 4), and exhibited the only two prints he had produced. They were both very satisfactory specimens.

Mr. Brier exhibited two transparencies, and an autotype composition picture, with sheep. He showed also several silver and autotype prints of the same subjects for comparison.

Mr. Heywood exhibited a picture by Mr. R. Mitchell—a street scene, with figures. He understood from Mr. Mitchell that the negative was taken on one of Mr. Mitchell's dry plates (secret process) in ninety seconds.

Mr. M. NOTON read a paper "On the Manufacture of Limes for the Lantern" (see page 3), and produced a light for illustration. The light was good, and seemed to have more blue rays in it than are obtained from the ordinary limes.

Mr. WOODWARD said, acid gum would have the effect of breaking up these limes in consequence of the liberation of carbonic acid gas. He had found it a good plan to powder the necessary quantity of gum, and to mix it with the other ingredients before adding the water.

The sciopticon was used by the members, for trying a number of slides, and retained its previous popularity.

The usual complimentary votes were passed, and the meeting, which was unusually well attended, was then adjourned.

#### EDINBURGH PHOTOGRAPHIC SOCIETY.

THE second popular meeting of the season was held in Queen Street Hall, on Wednesday evening, the 17th Dec., with an audience which filled the hall in every part.

The Exhibition consisted of a series of pictures illustrative of tours in North Wales, and was accompanied by a descriptive lecture by Dr. John Nicol.

The attention of the audience was maintained for an hour and a quarter, and the pictures elicited frequent bursts of applause. At the close of the Exhibition Dr. Nicol said that although the council would doubtless thank Mr. Alfred Pumphrey, of Birmingham, to whose kindness they were indebted for the very successful exhibition, he thought it right to give the audience an opportunity of expressing their appreciation also. He therefore proposed that a vote of thanks be given to that gentleman for his liberality on this as well as on former occasions. The motion was enthusiastically responded to.

### Talk in the Studio.

**PRESERVING SOLUTIONS OF GUM-ARABIC.**—The following is said by M. Hirschberg to prevent this gum from moulding:—A little concentrated sulphuric acid is added, which precipitates the lime present. Solutions treated in this manner have been kept for eighteen months without losing their adhesiveness or growing mouldy.

**AUSTRIAN COMPLIMENT TO ENGLISH PHOTOGRAPHY.**—The Photographic Society at Vienna, in selecting a presentation to its members for this year, have chosen four of the photographs exhibited by Messrs. Robinson and Cherrill at the Vienna International Exhibition. These will be reproduced and printed for distribution by Herr Albert's photo-collographic process. Messrs. Robinson and Cherrill have presented the originals to the Vienna Society.

**DISAFFECTION IN THE PHOTOGRAPHIC SOCIETY.**—A correspondent states that a requisition, signed by twenty members, has been forwarded to the council of the Photographic Society of London, asking the appointment of a special meeting to reconsider and modify some of the rules. Our correspondent states that the ostensible reason for change is to secure a larger infusion of new blood into the council, a more active interest amongst the members in the society's affairs, and an annual change in the presidency. He also alleges that "the real reasons of the disaffection which originates with a very few persons, are, in one or two, bitter disappointment and grudge in relation to the late award of medals; in one or two more disappointment at not being proposed in the council nominations for the coming year; and in one or two more personal pique." A veritable Cave of Adullam, if our correspondent be correct! As the question will doubtless shortly come before the public in a regular form, it is scarcely worth while to consider speculative points at present.

### To Correspondents.

E. R. D. — We do not know the address of a maker. As a rule, they prefer to work for the trade rather than for individuals, and hence offer no facility to private customers. Your best plan will be to get information from the dealer who supplies your goods, and then select. It also will doubtless get your plate re-burnished.

W. A. N. — We are not familiar with the special printing press to which you refer, but we believe that any good platen press, such as is used for ordinary letter-press printing, will answer for photo-collographic printing. 2. So far as we know you may use any of the processes we have published in the NEWS, during the last few years, in New South Wales. Albert's process, of which we have given repeated details, produces capital results.

**COLLO.**—The size of the mount of the cabinet portrait is six and a-half inches by four and a-quarter inches. The prints are generally about five and a-half by four inches; but vary slightly according to the taste of the photographer. The "Victoria" is not a recognized size in this country, nor, so far as we are aware, is it generally adopted anywhere. It is a term which has been applied to a size between the card and cabinet, which has never acquired general acceptance. 2. The only method of testing the strength of a printing bath is by precipitating the whole of the silver in a measured portion of solution, and weighing it. You will find the method described in our YEAR-BOOK for 1870, page 115, and in various volumes of the NEWS. Mr. Hart's Volumetric Apparatus is an excellent aid to the process. The argentometer is useless in testing a printing bath. 3. The lens in question may be used for cabinet, where vignette heads or medallion heads are required; but would require a small stop if used for full-length figures.

B. P. — The brown markings in your print are due to a fault in the paper. The albumen has run in an uneven wave, and where the albumen is in excess the print is of a browner or redder tint.

J. C. BRADSHAW. — The phenomenon is a very familiar one. Almost every one has noticed that on looking at a window for a short time, and then removing the eyes, a reversed image of it remains for a few moments. It is analogous to the perception of complementary colours under similar circumstances.

F. N. T. — The term "photo-mezzotints" was employed by Carl Meinerth to describe the prints obtained by printing through a medium; that is, the paper not in contact with the negative. A thin plate of glass being interposed, and direct sunlight printing employed, gives a soft image without perfect sharpness.

G. L. — We have heard some of the details you state; but it is scarcely worth while to publish them. The matter is scarcely important enough to dignify with the title of "conspiracy."

A. B. — Your transfer enclosed is under-exposed and over-developed; in short, it is fogged; the image being buried in a general veil. The streaks are due to the wax, of which too much has been left on the plate. It should be rubbed until no perceptible trace remains, the glass having been carefully cleaned first. Toning is not always necessary, but is sometimes valuable, not only in improving the colour, but in clearing the image of the smoky smudged effect which occurs under some conditions. Use a somewhat weaker solution, and if the chloride of gold be very acid, as yours appears to have been, neutralize it. If you wish to transfer the film when wet, you must learn to manipulate with sufficient skill in lifting the film. When it is loose on the plate, place the transfer paper upon it, and press down with a squeegee. Or allow the film to float in a dish of water, place the transfer paper underneath, and with a camel's hair pencil move the film into position, and lift both out together. Patience and the gradual acquisition of experience will accomplish much. You will find an article on the subject in our YEAR-BOOK, and shortly some further detailed articles on the subject will appear in the NEWS.

**NOTICE.**—Copying from a glass positive is not an easy operation, and rarely gives very successful results. It is difficult for us to form an idea how far you have been successful in the examples forwarded, inasmuch as we cannot tell to what extent the defects in your prints are due to defects in the original. No. 1 is insufficiently toned; No. 2 is imperfectly fixed, the mottled brown effect being due to imperfect fixation; No. 3 is the best, and may possibly be a moderately good copy of an imperfect original.

H. W. — We cannot tell you with certainty which form of ounce any special formula is intended to express—thanks to the confused muddle in which English weights and measures remain; but, as a rule, it is understood that in photographic formulae the ounce of 480 grains is understood. 2. In the case described, where a plate has been over-exposed, the image rapidly flashes out on applying the alkaline developer, and if it be not washed at once as described, the image almost as rapidly disappears, a general reduction covering the surface of the plate. The appearance is very similar, in fact, to that of an ordinary wet plate under similar circumstances. When development is going on properly the image gradually acquires more force; but when fogging sets in the image begins to disappear, because the whole surface is becoming reduced instead of the image only.

**SPOTS ON NEGATIVE.**—Wash the gum thoroughly off the surface, and then apply strong fresh hypo or weak cyanide, which will at once remove the spots.

D. D. (Belgian Subscriber). — Many thanks. Your communication arrived too late, unfortunately, for the YEAR-BOOK, but shall appear in the NEWS.

E. GARLICK. — Thanks. Your useful hint shall appear in our next.

M. C. — Thanks. Your communication did not reach us in time for the YEAR-BOOK.

N. G. — Your negatives were received a few days ago without any letter. Letter received just as we go to press. Answer in our next.

C. A. FERNLEY. — Your carbon print is very good as a beginning. Thanks and reciprocations.

Several Correspondents in our next.



## The Photographic News, January 9, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO. SCIENTIFIC SOCIETIES' CLUB—PHOTOGRAPHY NOT ALWAYS DESIRABLE—THE PROGRESS OF LICHTDRUCK—MERCANTILE PHOTOGRAPHY.

*Scientific Societies' Club.*—There is a proposal to form a club in connection with scientific societies, at which members of the various societies in London can meet together, and enjoy social intercourse. So many of the members reside out of town that it is felt that a club of the nature contemplated could not fail to be popular. Already a very strong provisional committee has been formed, which includes among its number several members of the chemical and photographic societies, and there seems no doubt that the club will be founded at an early day. It is proposed to have a site in the vicinity of Burlington House, the entrance fee and subscription being very moderate for a West-end Club. The annual subscription proposed will be but three guineas for town members, and a guinea and a half for country members; while those who are original members will pay rather less. Such a club, it is suggested, will be of especial value to men resident in the provinces, who would find it a convenient rendezvous when in town, and it is proposed to make the institution useful in the highest sense to scientific men by having, in addition to ordinary club requisites, books of reference and scientific apparatus for the use of the members. The honorary secretary *pro tem.* is J. Logan Lobley, Esq., F.G.S., 59, Clarendon Road, W., and among the present committee may be cited the names of Dr. Hall Gladstone, F.R.S., E. W. Cook, F.R.S., H. Woodward, F.R.S., Dr. Wallick, Prof. Church, Lord de Blaquière, Rev. C. Pritchard, F.R.S., Dr. Dupré, &c., the list affording a good guarantee that the club will be well supported.

*Photography not always desirable.*—There are some circumstances under which the aid of photography is best not invoked, and an incident we are about to allude to is certainly one of them. A friend, who is much given to yachting and boating, has often invited us to his place, near Gravesend, to join in a water excursion, or to make one of the crew during a sailing match. The intended visit has never come off, although renewed year after year, accompanied by sailor-like descriptions as to how well the yacht behaved under the hands of its owner; how bravely she had weathered the most terrific gales; and how jolly it was on board of a night, sleeping in the snug little cabin. The yacht was, in fact, our friend's hobby, and he was never tired of talking of her. She had never been second in a race with craft of the same burden, the weather was never too dirty for her to venture abroad, and her beauty under full sail, we were assured, could only be fitly described in a poem. To tell the truth, we were in our turn rather proud of our friend, and he used to do duty very often in conversation, being referred to as "an intimate friend who is a yacht owner," or "a man who sails one of the best racing craft on the coast, and who is always sending invitations for a cruise." But one unfortunate day our shipowner had his vessel photographed, and, although he did not favour us with a copy of the picture, we had an opportunity of seeing it a little while afterwards. Perhaps photography had not done the craft justice—the art is often inveighed against—but, in any case, the result had a most disheartening effect. Romantic notions that had been formed by the florid descriptions given vanished into thin air; for, instead of a schooner-rigged yacht of some fifty tons or so, with milk white deals and shining brass fittings, there was nothing apparently but an ugly iron boat, fitted with a mast, with a clumsy coffin-like box on board that served as cabin. How much better it would have been to have had a charming little fancy sketch in water colour, showing the swift little yacht with snow white sails, scudding along at some dis-

tance from shore over the bright blue billows, with every stitch of canvass set, and the gallant owner half way up the rigging!

*The Progress of Lichtdruck.*—One often sees little albums or strings of miniature views got up for sale to visitors at fashionable watering-places or frequented districts. Some years ago it was the fashion to print such pictures of a vivid salmon colour, with foliage, mountains, and bricks and mortar all of the same flesh-like hue; but more recently they have been produced of a greyish tone upon a highly glazed surface, to resemble photographs, for which they are very often taken. Indeed, we have seen visitors, when purchasing pictures to carry home with them as *souvenirs*, turn over a mixed collection of real photographs and these spurious imitations, and select out the latter, because in these the snow mountains were depicted much more white and prominent, the steamboats on the lakes more vividly, and the architecture more imposing. In the photograph the grandeur of nature was quite tame in comparison, for Mont Blanc—say, taken from Geneva—appears so low and insignificant, that, however much it may be in accord with reality, it does not come up to a traveller's notions, and will, as he knows very well, be disappointing to his friends at home, and so the more striking prints are selected. Of course, the camera pictures, taken at close quarters on the glaciers, showing deep crevasses and huge cornices of snow and ice, such as Mr. England has given us, are grand enough in all conscience, but the greater portion of the travelling public in Switzerland do not venture so near the scenes, but confine themselves to looking at them from a distance in their excursions from Geneva, Chamounix, Lucerne, Zermatt, &c. It is for this reason that the spurious pictures, being a little more exaggerated than the real photographs, are accepted by the general public, who, however, imagine at the time they are really purchasing pictures taken in the camera. Some of these lithographs are exceedingly well done, being most accurately copied from photographs, only the spires and mountains are made a little more lofty, and lakes and waterfalls a little more extensive. But now these sham productions seem on the eve of disappearing, for with the producer the great question is simply that of cost, and if the real thing can be provided for the same money as the spurious one, he has, of course, no objection against selling the genuine article, and, so long as he can get as many of them, turning an honest penny. A collection of prints that recently came under our attention, consisting of views on the Rhine, in tiny albums, proved on careful inspection—for a sound examination was very necessary—to be in part real photographs. They were, in fact, Lichtdrucks, but printed on grey paper on a white mount, and glazed all over just like the common lithographs, of which another album consisted. In fact, a casual observer, or even one on his guard against spurious photographs, would at once reject them as being unmistakably of the latter kind, for such care had been taken to make the genuine thing look like a counterfeit, and the effect was so successful, that at first sight an experienced eye would have been mistaken. It is to be hoped that the time will soon come when such photographs will be put forward for what they really are, for as soon as the public learn that the pictures are not only real photographs, but also of a permanent nature, a ready sale of them may be relied upon. The cost of the little album to which we refer, and which contained nearly a score of Lichtdrucks, was about one-and-sixpence.

*Mercantile Photography.*—Merchants and shippers are fully alive to the use of photography. All new pictures of hardware and cutlery are photographed, and dispersed to retail houses or carried round by travellers, and the sale is often effected simply through the medium of the photographed samples. In shipping goods to the Colonies, the little pictures serve their purpose even better. At the same time that a cargo is being shipped in this country to Australia, or other like country, a set of photographs is



dispatched by mail, showing the nature of the goods forwarded, and by the time the ship arrives every bit of its cargo has already been sold by the aid of the photographs. There is no delay in unpacking, and sampling, and hawking round of patterns before the sale of the cargo is effected, but the goods are bought and paid for the moment the vessel arrives in port, the merchants sometimes obtaining their money two or three months sooner than was the case formerly. Here, therefore, is photography serving mercantile interests in a most essential manner, and taking the place, in a great measure, of the commercial traveller. The art can be trusted with less hesitation than many good gentlemen of this talkative fraternity, and it inspires more confidence than all the fine drawings and sketches in the world. Buyers would demur purchasing goods from a long way off on the strength of a draughtsman's sketch, just in the same way as a thrifty housewife would decline to furnish her house through the medium of an illustrated catalogue; but it is different when one sees a photograph produced accurately to scale. In most cases it would serve all the purposes of the pattern sample itself.

### A MONTI'S TRIP WITH MY CAMERA.

BY REUBEN MITCHELL.\*

RETURNING to our hotel, the following morning proving fine, we started after breakfast with our camera to take views of our favourite subjects, and fixed on a very suitable position much nearer to the town than the cemetery. There was considerable haze in the distance, and we waited some time, but it did not entirely clear away. We exposed several plates, and secured some fine pictures. Returning into the town, we exposed others from the bridge across the river Seine, and these completed our camera operations; and we developed both our Paris and Rouen subjects on our return home to England. During the afternoon we again visited several of the fine churches, and took a last look at these splendid structures. We returned to the hotel, and packed our things ready for leaving Rouen on the following morning. After breakfast our baggage was stowed away on an omnibus; my friend settled our accounts; we bid our kind friends adieu, and drove to the railway station on our way to Boulogne home again—a most pleasant sensation, if rambling about only for a few weeks. We were soon seated, and off we went, passing through an uninteresting country. Arriving at Amiens we had to change, and wait for the train for Boulogne. There is a very fine buffet at Amiens, and well conducted; the viands excellent, and ready on the arrival of the train. We had outlets with grated potatoes, and good soup and claret; very civil and attentive waiters. Many of our English eaters at the refreshment rooms at our railway stations would do well to make a tour in France, and see the difference in the comfort in theirs and the discomfort of ours; also the difference in the quality of the viands. The train for Boulogne rolled into the station, and our baggage and ourselves were quickly in the train. Leaving Amiens, we passed some of the fortifications that had been made during the late war. The town appeared to be a thriving place, as there were numbers of new buildings; also some weaving sheds, and other works. The country is very flat from here to Boulogne, and in many places there are large tracts of swamp, the river flowing deep and sluggish. There are large numbers of fine tall poplar trees along the banks of the river, with numerous rustic farmsteads, and small villages or hamlets along the line of rail, nestling among trees and shrubs. There are also large market gardens, with melons growing in abundance in the open air, and numerous fields of fine flax. The land here seems to favour its growth. After leaving Abbeville the railway runs along the coast to Bonlogne, frequently giving us

glimpses of the sea; also many very fine subjects both for the camera and the painter. Arriving at Boulogne, we were much disappointed at having to wait till after midnight before we could cross the Channel to Folkstone, and as there was no other alternative we had our luggage conveyed to a hotel on the quay, within a short distance of where the steamer was moored that we intended crossing the Channel in. We took a stroll, but Boulogne is not a very interesting place, except for its notoriety as a fashionable watering place. There is a very large hotel overlooking the sea. The sands and shore are very fine, and well suited for bathing. There is a small pleasure garden near the large hotel, and an excellent band was playing for the amusement of the visitors, who appeared to be principally English. We dined at the table d'hôte, and had another stroll, but nothing attractive came in our way. At 12.30 p.m. we ordered our luggage on board the steamer, and when we entered the cabin all the berths were engaged, only one of the large form-like berths being at liberty. My friend decided to go on deck, and I laid down as soon as we were out in the Channel. The steamer rolled and pitched about, and it was with some difficulty I could keep from being tossed on the cabin floor. We arrived at Folkstone long before daylight, and coming on deck we made our way to the Custom House, where we had to wait some time before our luggage was brought in for examination. We had little difficulty in getting it passed and transferred to the railway station close at hand. One of the officials kindly directed us to a small hotel that was open for the reception of passengers arriving by the steamers. On entering we found many of those who had come by the same steamer as ourselves, and we all looked rather seedy; but a little refreshment, consisting of a cup of warm tea, was very acceptable. We had to wait some time for the train; but on moving once more in old England there is a sensation of pleasure which can only be appreciated by those who have left their native soil, if only for one short month. The route from Folkstone to London, by way of Tunbridge Wells, is very interesting. We at last rolled into Charing Cross Station about eleven o'clock a.m., and stopped in London all night, but having a number of plates undeveloped, I was very anxious about them, so I left on the following day by the eleven o'clock train. My excellent friend, having business to transact, remained in London, so we had to part company, after one of the pleasantest and most enjoyable trips imaginable, and arrived safely in Bolton.

I have penned these notes from memory since my return home, simply describing what we saw and came in contact with, hoping they may be of some service to future travellers in the country we passed through.

### AMERICAN CORRESPONDENCE.\*

*An Error and its Remedy.*—As you are famous for making large work in England, not to say “monstrosities,” the following ingenious method (for which I am indebted to Mr. O. G. Mason, photographer at the Bellevue Hospital) of “backing out” of a mistake after you have made it, may be of use to some of your readers. Mr. Mason writes me as follows:—

“A few months since I received a note, requesting me to call at the office of a prominent railroad company ‘upon professional business.’ On answering the request, I was ushered into a long hall, upon one side of which hung a map forty feet long and nine feet wide, highly finished in water colour, such as was deemed best for representing the conformation, variety, and general geographical features of the vast tract of our territory lying between Lake Superior and Puget Sound, on the Pacific Ocean. The timber land was represented by seemingly numberless miniature trees in deep green; the mountains in blue, white, and brown; rivers, lakes, and ocean, in brilliant blue, &c. This map I was asked to photograph to quarter scale, which would make my copy about ten feet by twenty-five inches, exclusive of margin. With

\* Concluded from page 3.

\* Continued from page 2.



due degree of hesitation, I undertook the work, before learning, as I afterwards did, that it had been pronounced impossible by others who had examined it. Of course it would not be feasible to use a plate ten feet long, and the width of the hall would not admit of working a proper lens for producing an image in sections twenty-five inches high. I was therefore obliged to remove the map to other quarters, and as my own place was fully occupied by special work which I could not well defer, I made arrangements for the use of the operating room of a skilful friend, whose reputation led me to engage his assistance on the work. The map was carefully rolled and, with the aid of four men, removed to the place selected. I concluded to make the copy in six sections, upon 30 x 26 inch plates. A plank frame as high as the map was wide, and one-fourth its length, was erected upon a movable platform, and securely fastened in a true perpendicular. About ten feet of the map was then unrolled and held to the frame by tacks driven through the heavy silk binding which covered the outer edge of the margin. The camera was placed in position, focus arranged, and a trial plate made; everything appeared satisfactory.

"This preparatory work had consumed most of the first day; and in order to insure our labour for readiness to begin early the next morning, we nailed both the camera-stand and the platform on which the map was mounted, to the floor. The great value of the map was such, that, for safety against accident, by storm or otherwise, it was taken down, re-rolled, and placed in its metallic case. When I reached the operating room on the next morning, I found my friend and his assistants busily making a negative of the first section of the map, which they had again placed in position. Upon inquiry I was told that careful measurements of the image on the focussing screen had been made, and everything found satisfactory as on the day previous. The work was proceeded with, the whole day being required for its completion, although we had no failures from error in timing a single exposure or in manipulation. But the heft of the map, and the great care required in handling it, made the work necessarily slow.

"On the next morning the negatives were varnished, and the printing began. Some idea may be formed of my surprise when, on the fourth morning from the beginning of the work, I attempted to mount an entire copy of the great map, and found that the sheets would not join, or rather, that the border and all geographical lines failed to meet. Upon measuring the negatives, I found that the left-hand end of each image was one-fourth of an inch larger than the right-hand ends on the same plate. Owing to some error in measurement, or change of position after exposure of the trial plate, the whole series had been made without the original having been at a true right-angle with the axis of the lens; hence the distortion. What could be done to remedy the defect? Making a new set of negatives was out of the question, as the original was then far on its way across the Atlantic Ocean. The order was an important one; large sums of money were expected by the company, and some by myself, if the work could be successfully completed. After some days' experimenting, I constructed a mounting table, large enough for the whole copy when mounted, around which was fitted a stretcher frame, which could be easily removed at will. Upon this frame I tightly stretched thin muslin, known in the trade as 'strainer muslin.' The narrow side of each sheet was spread with thin starch paste, the proper consistency having been determined by experiment, gradually working it over the entire sheet, which was then quickly laid on the stretched muslin, and the narrow end expanded by a gentle pulling pressure of the hands, until certain lines on the print should coincide with others previously drawn parallel by the use of a long straightedge, the entire length of ten feet. The stretcher was then removed from the table and allowed to hang by one edge, sustained along the central portions by slats or braces to prevent the sides from springing inward by contraction of the drying prints. When thoroughly dry, the entire map was stripped from the thin muslin, a process rendered easy by the porous nature of the material and the thin starch used in mounting.

"The prints were then remounted with strong 'bookbinders' paste on firm heavy muslin, upon which parallel lines had been ruled as in the former case, to serve as a guide for any further expansion, which was usually found necessary in places, in order that all the lines might meet properly.

"In this way the error in making the negatives was by a large amount of work corrected, and the photographic copies of the great map delivered with satisfaction to all except the maker, whose profit on the estimated price had, by the extra work

required, been reduced, until it had changed to the wrong side of the balance sheet.

*Retouching at Night.*—A great many photographers whose circumstances compel them to do with little assistance will find the following of use to them. It is sent me by Herr. F. Weadling, of Vienna:—

"Doubtless many photographers have tried to use artificial light for retouching the negative, but, it seems, without result. I never read or heard of success. I have made also different efforts in that way; but in the last winter before Christmas-time work pressed me to make another experiment. I tried a petroleum lamp, with round burner, and fastened to it—in order to secure a stronger light and parallel beams—the parabolic mirror of my magnesium lamp. I gained an intensive light, to be sure; but on retouching, I felt my eyes very much affected, not being able to work long.

"Now, I remembered that once a watchmaker told me he was able to work easily in the evening, since he employed the light blue glass (called optical glass); and I followed him in using that material. The effect was excellent, and since I have retouched a great number of negatives in the winter past at night.

"As the parabolic (or spherical) mirror concentrates also the heat beams, it would perhaps be an improvement to use instead of the blue glass a 'cuvette,' containing a solution of sulphate of copper with ammonia or Prussian blue dissolved in oxalic acid.

"I think if you publish this, that the apparatus will in a short time be in every photographer's hands, because it is a welcome requisite, although it may be considered both tough and very simple—a very egg of Columbus."

Wishing you all a clearance of the fog, and a happy new year.—Truly yours,

EDWARD L. WILSON.

Philadelphia, Dec. 15th, 1873.

## NOTES ON PHOTOGRAPHY IN THE ARCTIC REGIONS.

BY LIEUT. CHERMSIDE, R.E.\*

MR. PRESIDENT and Members of the Photographic Society: I have at the same time to express to you my thanks for the honour you have done me in asking me to read a paper on "Photography in the Arctic Regions" before you, and my regret that such opportunities as I enjoyed of studying the effects of the light, temperature, and the rarefaction of the atmosphere on the ordinary photographic processes, should have fallen to the lot of such a novice in the art as myself, and therefore to one little likely to derive therefrom much information of practical value.

As, however, so little has hitherto been done in the way of Arctic photography, I trust that photographers may be able to, at any rate, deduce some conclusions of interest from my experiences. The only existing Arctic photographs that I know of, besides Mr. Leigh Smith's, have been taken by Americans, Austrians, and Swedes. Those taken by the Americans are most interesting, and form a large series illustrating an expedition to Baffin's Bay in 1869, undertaken by the artist William Bradford solely for art purposes. Mr. Bradford was accompanied by two professional photographers of Boston, U.S., and their complete and valuable series has recently been published. Of the Austrian photographs I know nothing, but conclude they were taken in Lieut. Weyprecht's expedition of 1871. Those forming the Swedish collection were taken in 1872-3, and are on plates about 6in. by 8in. I have seen the negatives, and shortly expect some prints.

All the photographs that I have seen are marked more or less by the same characteristic defects, a want of density, and dark mottled stains, as if produced by an uneven mixture of the constituents of the developing solution, to which I shall have occasion to allude again. As regards our own collection, I should like to say, before describing our photographic difficulties, labours, and results, that photography was with us merely an experiment, and, anxious as we were for its success, it was always of secondary importance to our main object, exploration to the north. We therefore only found ourselves in bays and fiords when driven in by gales

\* Read before the Photographic Society of London.



or ice, or for surveying and shooting purposes, and the opportunities of photographing the striking features had then to be seized without much reference to the artistic considerations of the best light and time of day for taking each particular subject, or the best position from which to take it.

Owing to my being detained in Ireland until within a few days of starting, four or five days' practical instruction was unfortunately my total stock of experience.

Mr. Leigh Smith, whose guest I was to be, left all arrangements as regarded photography in my hands. He had already a small travelling camera, and apparatus for dry plates 7in. by 9in.; and Mr. Thomas, at a very short notice, supplied us with a complete apparatus for wet-plate photography, with plates 10in. by 8in., with the exception of a tent, as we expected to knock up an operating-room on board. Only arriving at Dundee twenty-four hours before the ship sailed, I had no time for further preparations, and on the 10th of May we sailed for the north.

It was not till the beginning of June, on finding the north-eastern trend of the ice along which we were cruising in search of an opening leading us towards Spitzbergen, that we began to think of photography. It was a matter of some time and thought to unpack and stow in a small ship's cabin, already crowded with the instruments and apparatus pertaining to other pursuits, the fragile paraphernalia of a photographic apparatus, especially as we were experiencing very rough weather; it was, however, successfully done, and I may add that during the whole voyage we never had a smash, except from such accidents as might happen on shore.

I may here describe our operating room; it was a mere cupboard, in which you could barely stand upright, four to five feet long, and a little over three feet in width, lighted in one corner by the small round port protected outside by iron bars, as is necessary in all ships intended for ice-work, so that the quantity of light was a minimum; and many of the defects noticeable in our negatives are, I think, due to our having to develop them in almost total darkness. A candle, when placed at a convenient height, either burnt the ceiling, or, from the proximity of the tin guard above it, caused a lot of smoke apparently deleterious to the photographs; it was, moreover, unavoidably in the way, and, owing to the impracticability of getting its light in the right place, its use was abandoned. A movable wooden frame was fixed in front of the port whenever the room was required for photographic purposes, and this was covered with only a single thickness of yellow tannin, as with two thicknesses, or even a single one, of orange-coloured paper, one could see nothing. We also experienced much difficulty in the way of manipulation from the want of a sink, tap, and cistern; and a basin and small jug, which had to be placed on the floor and lifted when required, decidedly increased the difficulties of handling plates 10 by 8 inches, and of the prompt application of water so often necessary. We suffered a good deal from the condensation of moisture, which took place readily in so confined a space; and which gave rise to streakiness and other defects in the plates. A deck-house, if it could be warmed, would undoubtedly be a good arrangement; but from the difficulty of warming it, I do not think a tent will prove of much use.

On the 8th of June we reached King's Bay, Spitzbergen, lat. 79° N., long. 12° E.; and the jagged peaks of the mountains, with here and there dark patches of hard slate or quartzite showing through their snowy covering, the immense glaciers, like frozen rivers, winding down the gullies and ravines between them, all lying bathed in the sunlight of an Arctic summer night, promised a fair field for the camera. The next day was spent in futile attempts at photography; and perhaps an account of them may be the best way of illustrating the difficulties we encountered.

The camera is first taken ashore about a quarter of a mile, the passage being at some times of tides rather obstructed by ice, and we at once meet the difficulty that the Arctic photographer continually encounters—namely, that of locomotion. The ground is ragged and rocky, covered with snow from one to three or four feet deep, all very slushy from the

fierce heat of the June sun, and serving to carefully conceal the holes between the stones, so that the greatest difficulty is continually occurring in selecting a suitable position. However, the position is at last selected, and a firm hold for the legs of the stand obtained below the snow, the view focussed, and the stop decided upon. Returning to the ship we clean, coat, and sensitise a plate; another journey to and fro, and after exposure the plate is handed up the ship's side, and the operator retires into his den. Having attached the plate-holder I pour on the developer (iron 30 grs.), and soon a horrid thought seizes me that every detail required for the production of a negative has been carefully carried out, with the trifling exception of opening the slide. Five minutes' application of the developer persuades me that such must have been the case, as I fail to perceive any symptoms of the film having seen the light. Sorrowfully another plate is prepared, and the laborious journey by water, ice, and snow again performed with a like result. After trying it a third time we bring the camera on board, and take to merely exposing plates for experiment. Up to this time we had given to each of our attempts 8, 10, and 15 seconds' exposure. There is a good deal of motion on board, but exposure to the light should be plainly indicated. By the use of heated developer and a 40-second exposure we succeed in obtaining the faintest of images, but no more; and, disgusted, we give it up, and go in for dry plates. These prove an equal failure, owing chiefly, however, I imagine, to the age of the plates, which was two years, as this lot we subsequently from time to time came across bad batches. So we put away our apparatus in anything but a contented frame of mind, and go out shooting.

The temperatures of the air this day were:—4 A.M. 28° F.; 10 A.M. 36° F.; 12 noon, 34° F.; 9 P.M. 33° F.; 1 A.M. 31° F.  
(To be continued.)

## EXPERIENCES OF A PORTRAIT PHOTOGRAPHER

BY J. R. SAWYER.\*

DURING the course of my twenty years' experience I have seen many things which have touched me deeply—many things to move both to laughter and to tears. A photographer sees many sides of human character. He sees its vanity, its pettiness and ill-humour; he also sees its devotion, its love, and its kindness. Children who were my sitters have grown up to young men and women, and have brought in their turn their own little ones to the same artist to whom they themselves sat. Old people have dropped off, and left behind them loving ones, whom photography has blessed by allowing them to preserve mementos of the departed.

I suppose that every practitioner has his share of queer jobs. One of the most difficult I ever had was in the beginning of the Volunteer movement, and I was requested to make arrangements for photographing our contingent in the national defence at a grand review, which was to take place in Lord L——'s park, at 11—. It was necessary that the plate should be of a fairly large size, so I decided upon twelve by ten, and with my traps and impedimenta found myself, early on the day in question, at the little station near the review ground, with some hundreds of volunteers. What a confusion there was, to be sure. Here a general, bewailing the loss of his cocked hat; there a bandmaster who had lost sight of his musicians; here a captain without a company; and there a company without any officers whatever. However, matters got righted somehow, and we were soon *en route* for the battle field (otherwise review ground). What a splendid day it was! Bright summer time, soft breeze, turf like velvet, fine old trees spreading their luxurious branches, covered with the richest verdure, a magnificent mansion, ornamental grounds, and thousands of spectators, who had congregated from all parts of the county, made it altogether as pretty a sight as one could wish to see. But now came my special difficulties. I had chartered a waggon, partly because it would

\* Continued from page 11.



give me an elevation upon which to poise my camera-stand, and partly because there would be room enough in it to erect my tent. But how to get this precious waggon on to the review ground was another matter. Wherever I presented myself I seemed doomed to be turned back. At last I was fortunate enough to obtain, by dint of a good deal of hard work, a written permission from the reviewing officer to pass the line of sentries; but here my troubles did not end. My driver whips up his horses, and we achieve an advantageous position. Down came an aide-de-camp, like a thunderbolt, with a gruff demand to know what we were doing there. Explanations not being satisfactory, we had to move off. The same sort of thing occurred again and again, until at last I became sick and tired, and began to think seriously of packing up and taking myself off. However, after my last tormentor had left, a notion seized me, upon which I immediately acted. I directed the driver to place the waggon in a first-rate position just under a big tree, to take out his horses, take himself off, and return in some four hours or so. As soon as my vehicle was perceived in its new position down came my friend again, and insisted upon my moving. I showed my permission, explained the circumstances of the case; that I was engaged to do certain work; that that was the only point of view from which to do it, and inasmuch as I had neither horses nor driver I *could* not move, if it was ever so much desired. This last was a ploy. Just then the bugles rang out the "assembly." My friends were feign to leave matters as they stood, and so I remained unmolested. The troops fell in; the lord lieutenant of the county, surrounded by a brilliant staff, galloped into the open; the words "Present arms!" ran along the line; the band struck up "God save the Queen." At that moment I uncapped the lens, and got a negative sufficiently satisfactory to have some hundreds of copies printed from it.

In my own experience I have generally found the conduct of a photographic business a comparatively simple affair. I have never troubled myself much about the state of my bath; for instance, I was profoundly indifferent as to its acidity or alkalinity provided it took good pictures, and something like the following is the plan I have generally adopted. In making up a fresh bath, I simply dissolved commercial nitrate of silver in distilled or clean rain water, and then added to it a small quantity of a strong solution of carbonate of soda; this I filtered, then putting a small quantity into a flat well bath, coated a plate thickly with collodion, and left it in all night; I have generally found it in perfect working order next day. When this small quantity begins to show signs of deterioration, I filter it back into the bulk of solution first made up, which may amount to (perhaps) two gallons, and so keep using it over and over again until the whole quantity ceases to give good results; I then send it into the printing-room, where its strength is raised by the addition of silver to sixty or seventy grains per ounce, and it is then used up for exciting albumenized paper.

In developing, it is a good plan to have a saturated solution of iron and the acetic acid and water in a separate bottle, so that you can at once alter the strength of the developer to suit the particular class of subject upon which you are operating.

The collodions in the market are so numerous and so good as to render any especial naming invidious; most of them, however, possess special and different characteristics, and it will be found advantageous to mix them in various proportions to suit the particular modes of lighting adopted in different studios.

I have done a fair share of out-door work, and for views within a radius of a mile or two of the operating-room I have invariably found that the best plan is to send for a cab, prepare two or three plates of different sizes, put them into camera slides with blotting-paper at the corners, and two or three thicknesses of the same, well damped, on the back; get into your cab, go round to the points of view, expose the plates, and bring them home to develop.

I have frequently been absent two hours on these occasions, and always found the plates develop satisfactorily; it is necessary, though, that the slides themselves should be well wiped out with a wet sponge, and be kept in a horizontal position before exposure, and a vertical position after it.

There are a few other points to be noted about the conduct of a photographic business as a business, which may be worth noting. First, cultivate the children's portraits; no doubt they are troublesome, but patience and good temper will generally lead to success, and you will have secured your passport to the good offices of the parents.

Secondly, be very liberal in your business; never raise the least objection to retakes; never mind if your clients seem a little unreasonable; no one is without a little vanity, and as very few people see themselves as others see them, they are generally a good deal disappointed when the photographic view of their physiognomy is presented. Make allowances for all this, and treat your customers with courteous liberality.

Have the regulations of your studio and general business clearly drawn up and notified, and having carefully considered that they are absolutely necessary, *insist* upon their due observance. See that all the work sent out is as good as can be achieved; let it be real and honest, the prints well washed, and the pictures rendered as permanent as any known means will permit.

A most important element in success is that the conductor of a portrait business should be not only an artist, but a gentleman. In the early days, when photography was something like the Cave of Adullam, a refuge for the destitute, there were but few of education or position in its ranks. Now the case is different, and the principal of a business should be a man of sense, quick and active, with a knowledge of character, also a man of education and some scientific knowledge, as well as having an artistic faculty for readily seizing and adapting the materials presented to him. It requires all these, assisted by politeness and courtesy, to enable a man to reach the front rank of a profession which is, now-a-days, both honourable and lucrative.

## REFRESHING SILVER BATHS.

BY FRITZ HAUGK.\*

When a bath is out of condition, and is not very old, the solution may easily be rendered quite serviceable again, in two ways: either by the addition of some fresh nitrate of silver solution, or by adding gradually a few drops of permanganate of potash solution. But when the bath is a very old one, a more thorough and radical mode of treatment becomes necessary.

For some time past, I have proceeded to remedy my baths according to a plan of my own, and I have found the most successful results to follow from it. It is as follows: In the first place I pour the solution from the dipping bath into a suitable vessel, and evaporate it to dryness. The residue is then heated, and fused at a moderate heat, until it begins to froth and flow in a stream. As soon as the residue has cooled, I weigh it carefully, and a half of it is dissolved in twenty-four times the quantity of distilled water. The solution thus obtained is filtered, and the clear liquid is now poured upon the remainder of the precipitate, and the latter dissolved, so that the distilled water is only in the proportion of one in twelve.

A second filtration of the liquid now ensues, but in carrying out this operation it should be borne in mind that a fresh filter paper must be made use of. After filtering, the solution is poured back into the dipping bath, and is ready for immediate use.

The precipitate must not be over-heated. The solution will work brilliantly and uniformly. If too much heat has been applied, it is probable that the bath solution will require the addition of a little acid.



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## WINTER PHOTOGRAPHY.

EVERY reader of Lieutenant Chernside's interesting statement of his photographic experiences in the Arctic regions has probably recognised in them a magnified image, something like, in principle, to the well-known spectre of the Broken—of occasional results in his own practice of photography under the dreary conditions of an English winter at its worst. The "hard, grey weather," which Charles Kingsley exults in as producing hardy Englishmen, the photographer knows full well produces hard, grey negatives, when it permits negatives to be produced at all. At the outset of his paper, Lieutenant Chernside, who had naturally taken an interest in examining all accessible examples of Arctic photography previous to commencing his own work in that direction, states that all the specimens he has seen are marked by the same characteristic defects, "a want of density and dark mottled stains," the precise defects which, in an excellent article by Mr. J. W. Swan, written sometime ago, on winter photography, were indicated as the specific faults of winter negatives in England, and with which almost every photographer is familiar who works under the worst conditions of the season, without some effort to ameliorate them.

The photographic winter difficulties arise from two causes: the prevalence of a low temperature, which is always unfavourable to chemical activity, and the weak non-actinic character of the light. The first difficulty may be largely, if not entirely, overcome by artificial conditions; but the second can at best be only ameliorated. All photographic operations, it should be remembered, will be slower in winter than in summer. The collodion will set more slowly, and if the plate be immersed before it is fully set, streaks and arborescent markings will almost certainly be the result. The conversion of the salts in the collodion into bromide and iodide of silver takes place more slowly than in warm weather, and if the plate be removed too soon it not only contains a more superficial layer of sensitive salts, but it retains a larger proportion of free bromide and iodide, which act as powerful restrainers during development; and both causes tend to the production of a thin hard image. The amount of the light is not only much less, but its quality is much poorer and less actinic than in summer. According to Professor Roseoe, the total amount of photo-chemical action on a day in mid-winter is twenty-five times less than on a day in mid-summer; and, as Mr. Swan pointed out in the article to which we have referred, allowing for the variation in the length of the days, this shows that the chemical intensity of the winter light is ten times less than that of summer light. Hence where an exposure of twenty seconds would be sufficient in summer, two hundred seconds, or more than

three minutes, would be required to secure a similar effect in winter, even on the supposition that length of exposure would always compensate for inferior quality of light, which is more than doubtful. The feebleness of the light and prolongation of the exposure involve a variety of other troubles. When light is the strongest force acting on a sensitive surface the image is formed before any accidental adverse influence comes into operation, and a good negative may be secured in spite of some imperfect chemical conditions. But when the light performs its work feebly, all adverse influences are relatively more potent. Traces of impurity in the free nitrate of silver on the plate, traces of impurity (chemical or mechanical) in the collodion, any imperfection in the surface or cleanliness of the glass; in short, any cause which might initiate or modify chemical action has time to come into operation, and thus streaks, stains, and defects of various kinds prevail. The action of the developer is generally singularly tardy in winter. This appears to have been one of the most troublesome of the difficulties encountered by Lieutenant Chernside in his arctic operations. His experience as to the inactivity of a new solution, and the increased reducing power which the solution gained by keeping for a few days, are so singular that we repeat them here in order to point out the importance of repeating and verifying the experiment under more favourable conditions for observation. Speaking of the iron solution, he says:—

The solutions were therefore made up with water at temperatures from 90° to 120° F., and kept in the engine-room; and we found that under these conditions the developer would always act, provided it had been kept for a few days. With freshly made solutions but little result could be obtained, and the deoxidizing action of a ten-grain developer that had been made up for a week was stronger than that of a sixty-grain solution, unless the latter had been made up for at least thirty hours. The solutions were not used until of the dark, clear colour of brown sherry, and, once of that colour, seemed to keep indefinitely; whether this was due to persulphate of iron or not, no rustiness or want of transparency ever appeared. Until it had been made up for twenty-four hours the solution was clear and colourless, after which the colour gradually deepened, and it seemed of full power when from four to six days old. When used cold, or at the temperature of the surrounding air, however evenly poured over the plate, a spotted, mottled staining was in places always observable, as if the constituents of which the solution was composed were no longer held in intimate mixture. The refusal of the solution, when still colourless, to act at any ordinary temperature was not perceptibly altered by reducing the amount of acetic acid contained in it, which was diminished to a point at which the formation on the film of a dark purple scum showed the necessity of its presence; nor did the addition or withdrawal of alcohol within certain limits produce appreciable effects, so that we concluded that a sluggishness of action was induced by the climate, only to be overcome by mixing the solution and maintaining it at a high temperature. The proportions used in the solutions were:—

Protosulphate of iron	...	...	10 to 60 grains
Glacial acetic acid	...	...	6 to 18 minims
Alcohol	...	...	10 to 30 "
Water	...	...	1 ounce.

Of course stronger developers were applied to films that had been only exposed for one or two seconds or less, or where, as is often the case in Arctic regions, from the contrast of the objects in the view, their adoption seemed advisable. With instantaneous views, under disadvantageous circumstances of light, we found sugar of great use in bringing out the image; it was simply pounded, and a few grains placed in the beaker containing the solution with which the plate was about to be flooded; this substance seemed to stimulate the action of the developer, and also to increase the density of the deposit.

A very prevalent belief obtains amongst many operators to the effect that iron solutions act more satisfactorily some time after they are mixed, and especially as to the advantages gained by keeping a saturated solution in stock ready for dilution; but, so far as we remember, we have not found any former record of increased activity in the reducing quality of the solution as the result of such keeping, the partial oxidation of the iron salt generally tending to reduce activity, the peroxide acting, in fact, in some degree, as a restrainer. The experience of Lieut. Chernside appears, however, to have been constant in this

respect, and the fact is well worthy of attention and of experimental verification.

The chief control which the photographer possesses over winter conditions consists in his power to raise the temperature of his operating-room and of his chemicals to something like summer heat. Many photographers undertake this in some partial degree, but not thoroughly, and the result is not satisfactory. It is not difficult to warm the nitrate bath and developing solutions, and this is something: but it is of vital importance that the operating-room and studio should also be warmed, so as to maintain in the atmosphere and all the solutions a temperature as little short of 60° Fahrenheit as possible. Inequality between the temperature of various solutions, and between various solutions and the atmosphere, is in itself a source of many difficulties which may be avoided by the maintenance of uniformly warm conditions. The difficulty of doing this need not be great with the various modern appliances for simple, efficient, and wholesome warming which exist. Of the excellence and efficiency of George's Calorigen we have already reported in these pages. To the excellence of Brown and Green's stove a correspondent has recently referred, whilst ordinary stoves and ordinary fire-places are in many cases available.

In relation to winter light the photographer can do little. A flood of weak light in the studio will not equal, in result, a small amount of good light illuminating the sitter only. Clean windows, so that no portion of the light shall be shut out by a film of dirt; reflecting screens, to direct as much light as may be needed into dark shadows; the auxiliary action of diffused light, white or coloured; rapid lenses with full aperture; and similar appliances, may do something; but, on the whole, the photographer must rely chiefly on the perfection of his chemical conditions, and the aid of artificial warmth, to combat, if not overcome, the troubles of winter photography.

We have not adverted to the printer's troubles during winter; but we may remark, before leaving the subject, that in nothing is the aid of a little artificial heat of more importance than in toning and fixing prints, the solutions for which should in no case be used at a temperature less than 60° Fah., and might, in many cases, be used with advantage still warmer.

#### SENSITIVE COLLODION FOR THE WET PROCESS.

At a recent meeting of the Photographic Section of the American Institute, Mr. P. C. Duchochois gave details of a method of working the wet process giving unusual rapidity, the chief element of sensitiveness consisting, as he alleged, in the quality of the pyroxyline, which, moreover, gave a film free from texture. This is prepared as follows:—

"To prepare the pyroxyline mix in a thick porcelain mortar, heated to about 120° F., one pound of pure dry saltpetre with one and a half ounces of water and twenty-six fluid ounces of sulphuric acid at 66° Baumé. I immerse immediately, by small quantity at a time, as much cotton, well pulled apart, as the mixture will cover, taking care before each addition that the cotton immersed be well impregnated with the acids. During the operation the vessel should be covered, and the cotton turned over several times, in order to insure an even combination. The temperature should not be allowed to fall below 140° to 150° F. After twelve minutes of immersion the pyroxyline is rapidly washed in water, until the blue litmus paper shows no trace of acidity.

"It is then treated by a very diluted solution of bicarbonate of soda, washed four or five times, and, when thoroughly dry, immersed in alcohol during twenty-four hours.

"It is afterwards washed several times in alcohol, and allowed to dry spontaneously.

"The organic pyroxyline for dry plates and emulsion processes is prepared by the following formula:

Nitric acid at 41° Baumé	... 4 fl. ozs.
Sulphuric acid 66°	... 5 "
Temperature	... 150° F.
Time of immersion	... 10 minutes.

"For dry plates the washing in alcohol must be dispensed with, as its object is to dissolve the nitro-glucose which is necessary in this pyroxyline.

#### "The Collodion

is composed of one equivalent of iodine and one-half equivalent of bromide dissolved in 30 fluid ounces of plain collodion. The formula stands thus:

#### "Plain Collodion.

Ether cone.	... 13 fl. ozs.
Absolute alcohol	... 4 "
Pyroxyline	... 200 grains.

#### "Bromo-Iodide Solution.

Alcohol at 90°	... 12 fl. ozs.
Iodide of cadmium $\frac{1}{2}$ eq.	equal 92 grains.
Iodide of sodium $\frac{1}{2}$ eq.	equal 75 "
Bromide of sodium $\frac{1}{2}$ eq.	equal 52 "

Mix. With well settled plain collodion one half equivalent of iodide of sodium can be substituted for the iodide of cadmium, and the collodion used a few hours after its preparation. It gives somewhat more intensity, but is not so stable, and will be rapidly decomposed with most samples of ether."

Instead of using a large quantity of silver solution, as is generally recommended, Mr. Duchochois recommends a small quantity and frequent renewal. The developer employed is novel in some points. It stands as follows:

#### "Developer.

Water	... 8 pints.
Sulphate of iron and ammonia	... 5 ozs.
Sugar candy	... 2 "
Sulphuric acid...	... 1 fl. dr.

"Boil the solution for about five minutes, add one and a half pounds of acetic acid, and filter."

#### NOTES OF OBSERVATION AND PRACTICE.

BY AN EXPERIENCED OPERATOR.

WOODEN TRAYS FOR SILVER SOLUTIONS—TRANSPARENCIES FOR ENLARGEMENT—DISTORTION THROUGH THE SHRINKING OF PAPER.

[UNDER this head—"Notes of Observation and Practice"—our contributor, one of the most skilled and experienced of London portraitists, will from time to time place before our readers in brief form the results of his own extended observations and practice, as bearing upon topics of current interest to photographers, especially those belonging to the studio and dark room.—ED.]

*Wooden Trays for Silver Solutions.*—In Mr. G. Crough-ton's excellent article on enlargements he states that he uses for a bath a tray of wood, lined with brown paper which has been soaked with shellac varnish. No doubt this answers well, but to those who either cannot procure the varnish, or who do not care about the trouble of varnishing, we would recommend the substitution of the best American cloth, such as is used for upholsterer's work, for the paper. This can be used without any preparation, and, by careful folding at the angles, can be laid in the tray in one piece, thus avoiding joints, which are always dangerous. The edges should be turned well over, as, if the solution reaches the back of the cloth, it will speedily destroy it. There is one important drawback to dishes lined in this way; namely, their liability to injury from the sharp corners of the plates. A large plate accidentally dropped will make a hole which it is difficult to repair. For this reason we always use a wooden tray, coated with the best pitch, which answers to a charm. The tray should be made very hot before a coke fire, and some



boiling pitch, in which has been dissolved a little fine tallow, poured into and well spread over it. All inequalities may then be smoothed out with a hot flat-iron, an application of which will at any time stop a leak if it should occur.

*Transparencies for Enlargement.*—Mr. Crompton has undoubtedly "hit the right nail on the head" when he lays the utmost stress upon the quality of the transparency. Fifty per cent of the transparencies made by beginners, are under-exposed, as well as under-developed. We prefer to intensify, rather than tone, by pouring over the plate the ordinary pyrogallie re-developer, after fixing. This does alter the tone, and renders the deposit very non-actinic, while it is safer in many respects than the bichloride of mercury, which is so very liable to act unequally.

*Distortion through the Shrinking of Paper.*—Photographers will do well to devote some attention to this subject. So long as only small pictures were produced this distortion would be of little import; but now, when attention is chiefly devoted to large work, this is a matter which must be considered. No doubt this defect will be most fully developed in the case of solar camera prints, in which the paper is exposed and receives the impression when expanded, while the minimum of evil will be reached in collodion transfers, which are supported upon glass until dry.

Our plan is to apply the bulk of the mountant to the surface of the cardboard, only slightly damping the picture itself, and that as rapidly as possible, by means of a large sponge. The picture should be secured by placing upon it a sheet of thin cardboard, and well rubbing upon this with a large cloth. Freshly made starch, which has just become cold, answers better than anything which we have tried.

#### FRENCH CORRESPONDENCE.

THE year which has just passed away has been full of activity, so far as photography in France is concerned, and if the efforts made have not actually given birth to any new discovery of great originality, they have at any rate been instrumental in producing numerous improvements of great importance to the future of the art. 1873 will be, let us hope, an era from which we may date an advance in the progress of permanent printing methods, towards which our aim has always been directed since the origin of photography. There are at the present moment, without counting the ateliers of the War Office, those of MM. Goupil, Baldus, Du Jardin, Anand Durand, Lafman et Lourdel, now existing, and three new establishments where printing with greasy ink is exclusively carried on, those of MM. Geymet and Alker, Floury Hermagis, and Javel. Photography in pigments, as I have already stated, has now quitted the laboratory of the amateur to enter that of the professional photographer.

If this transformation is the result of a general movement, it is but just to recognize that the progress has been in large measure due to intelligent men who have prepared the way and facilitated the advance. The claims of M. Geymet in this respect ought particularly to be recognized; for, without pretending to alter in any way the original methods, he has rendered them especially practicable.

At the beginning of 1873 M. Geymet published his treatise on photo-lithography, and he presented to the Photographic Society of France proofs which produced a great sensation. Soon after came M. Fortier, and then M. Javel, who on their side demonstrated that the problem could be resolved in various ways; for whilst M. Geymet employed a lithographic stone, M. Fortier pulled his prints from glass, and M. Javel from metal plates. Afterwards there was published, it may be remembered, the fine work, called the "Album Contemporain," printed by means of papyrolith by M. Hermagis.

At the same time M. Marion, whom we lost in the same year, made known various practical improvements in carbon

printing, and published the two ingenious processes called Mariotype by pressure and Mariotype by contact.

The public demonstrations made by MM. Geymet, Jeanrenand, and Gobert considerably startled those orthodox disciples of the art, by the fact that the new processes enjoyed one advantage over the old ones which was not to be despised—viz., that of simplicity in their manipulation.

A communication of high interest was also made during the course of the past year by M. Leon Vidal. His memoir on polychromic photography contains the germ of a veritable revolution in the art. The results obtained by this eminent experimentalist prove that his method is not merely pure theory, but that one may really produce by the superposition of monochrome transparencies derived from different coloured mixtures made up like carbon tissue, the same effects as are secured by chromolithography. An atelier to carry out this subject in a commercial manner has been established at Marseilles.

At the present moment, too, M. Laroelic, of Constanti-nople, has obtained similar results to those of M. Vidal by successive printings in the press, the pictures approaching even more nearly still to chromo-lithographs.

The production of clichés has made so much progress during the last twenty years, and we have arrived at so great a degree of perfection, that there is, in truth, but very little remaining to be done. Nevertheless, we have seen during the past year several methods brought forward, which may, at least, be considered as ingenious modifications of processes already known. Emulsions, notwithstanding the efforts of many experimenters, have been but slightly recognised in this country; but, on the other hand, the practice of alkaline development is becoming very widespread.

Dry plates are beginning to take a place in studios where before their presence was refused. The publications of M. A. de Constant-Delessert have contributed, in a great measure, to bring about this favourable change. The two new wet processes published by M. Sutton appear to have numerous partisans.

Enlargement processes have made much progress since last year. The plan which consists of retouching, not the cliché, but an independent glass plate, having generally a matt surface, and coated with an adhesive substance, permits one to obtain pictures much superior to those hitherto secured by enlarging methods.

Three works relating to photography have been produced during the course of the past year. They are the "Manuel de Collodion Sec au Tannin," by M. le Comte Courten; "Le Collodion à Sec mis à la Portée de Tous," by M. de Constant; and the sixth edition of M. Van Monckhoven's book, entitled "Traité Général de Photographie."

I spoke just now of the retouching of negatives. We all know that the admirable portraits which are produced in the studio of M. Adam Salomon, and which are truly works of art, owe a large portion of their beauty to his skilful method of retouching, to which every cliché of his is subjected. A very great number of portraitists visit this eminent photographer and sculptor, and ask his advice in the matter of retouching, showing M. Salomon pictures which are often deteriorated by unskilful after-manipulation. The following is the plan adopted by our friend in the matter, and one which he particularly commends to all photographers:—After having varnished the cliché in the ordinary manner, he varnishes with a matt varnish, or with a slight film of gelatine, the reverse side of the negative, and it is upon this surface that the most important part of the retouching is done, the negative film itself only receiving a very slight manipulation, such as may be required for stopping out freckles, pimples, and the like.

In this way the value of a cliché is not jeopardised by retouching in a manner which may be irreparable, and prints are, moreover, secured of exquisite softness, which combine in themselves perfect sharpness and vigour.

ERNEST LACAN.



## M. CONSTANT ON DRY PLATES.—No. 3.

*Concerning Lens and Exposure.*—Everybody has his own ideas regarding the kind of lens to use, and I must admit that my own have varied much in the matter. Nevertheless, I am now of opinion that a globe lens, when one can be obtained good and powerful, has much depth of focus, and reproduces aerial perspective in a very satisfactory manner. I know that there are many more rapid instruments, and that the globe lens requires a somewhat lengthy exposure, and centralises more or less; but, at the same time, it does not distort; it marks the various planes, and for most cases a pose of two or three minutes is enough.

In this respect, I may explain that in landscapes containing much distance, and which are well lighted, my exposure is often reduced, without inconvenience, to thirty seconds; but with views of country close at hand, with dark verdure and with the foreground in the shade, to give an exposure of three minutes is always a prudent precaution. With this new process, therefore, and with the aid of alkaline development, the average exposure is twice as long as when one works with wet plates, and, according to the lights and contrasts, one may reduce to half the amount, or augment as much again; but with the dry plates the best rule is always to give full exposures, and thus facilitate the development. The globe lens that I employ has a focus of nineteen centimetres, and, with an ordinary aperture of six centimetres, it will cover a whole-plate completely.

*Development.*—With several of the dry processes I have found great advantages to accrue from development with iron, the clichés being more fresh and transparent. I have even found that the dry film, moistened by a bath of ammoniacal water, and well washed under the tap, will proceed to develop very regularly by employing a five per cent. solution of iron, with the addition of gelatine. But this development is rather more difficult to conduct, and an exposure of a notably longer duration is required than with alkaline development, which enjoys the material advantage that it may be employed strong or weak, in such way as to correct the errors of exposure. A reproach may be made against alkaline development, to the effect that it produces images in which the softness is often exaggerated; but this defect (if it be one) becomes a virtue when albumen is used, for this substance has a tendency to yield hard pictures. It is alkaline development that I have chosen for my new process, and among the many formulæ which have been cited, I have chosen the one mentioned by Messrs. Mawson and Swan in a recent publication. The following is the composition of the three solutions necessary:—

No. 1.—Alcohol	...	...	30 cubic centimetres
Pyrogallie acid	...	...	4 grammes
N. 2.—Distilled water	...	...	30 cubic centimetres
Fresh carbonate of ammonia	...	...	1 gramme
No. 3.—Distilled water	...	...	40 cubic centimetres
Bromide of potassium	...	...	1 gramme

After the exposed plate has been put into a bath filled with ordinary water, where it must remain for a couple of minutes, it is put gently under a water rose, and is then placed upon a plate-holder. Then, proceeding to its development, there is poured upon it (supposing it is of whole-plate size) thirty cubic centimetres of water, together with twenty or thirty drops of No. 1 solution, which ought to complete the softening of the film commenced by the water. This solution is flowed over the plate for a minute or two without producing an image. To the liquid is then added ten drops of No. 2 solution, and two or three drops of No. 3 solution. This mixture thrown over the plate at once produces a result, and the image comes up with such vigour that very often the employment of silver as an intensifier is quite unnecessary; for if the details of the

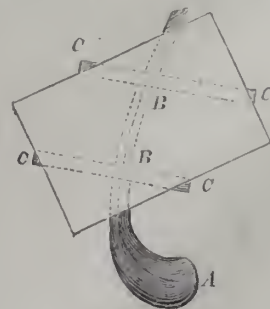
picture fail to appear, one may add a few drops of No. 2, or employ a fresh mixture, in which the brouide solution is somewhat lessened, or left out altogether. If the exposure has been sufficient, five minutes ought to be enough for completing the development of the negative. If the cliché lack vigour, it must be intensified with a pyrogallo-citric acid solution, containing several drops of neutral nitrate of silver; but the intensifying should be conducted with prudence, so as to prevent the film becoming too opaque.

*Fixing.*—When the development has terminated, it is followed with a thorough washing of the film, and the plate is then put into a bath containing a saturated solution of hyposulphite, often renewed. One need not fear to prolong the operation of fixing, and in every case not to terminate it until every trace of iodide of silver has disappeared, even on the margin of the plate. With dry plates it is exceedingly difficult to get rid of the iodide, and often, when printing, one does not observe that there is any remaining, and opaque patches are then inevitably caused. It is scarcely necessary for me to add, that after the fixing a very thorough washing of the plate should take place, which should, moreover, be carefully conducted.

*Retouching and Varnishing.*—As a rule, dry plates soon lose their moisture, but, nevertheless, it is necessary to see that they are properly dry before they are varnished, for the least trace of moisture will produce irreparable patches and stains. A varnish which does not present a hard and brilliant surface will not bear printing from. Moreover, certain kinds of varnishes do not well support change of temperature, and either cause the loss of the negative, or necessitate a delicate and troublesome mending. It is important, therefore, to secure a varnish which may be thoroughly relied upon.

Without retouching landscape negatives, as done in portraiture, there are, in photography, many things which it is impossible to reproduce properly without employing the paint brush a little, or having recourse to a little ingenious artifice. Thus, besides the actual retouching, it is possible to varnish the back of the cliché and work upon the surface with a stump or with a red chalk; or, instead of varnishing, one may fix to the glass a little transparent paper upon which is limned cloud effects, or a dark surface, to preserve the negative from being printed through too much in those parts which lack detail. Outlines may also be applied to mark the lines of a lake or of the horizon, care being taken in the printing to preserve parts of the negative from printing too much. All these aids, if practised with intelligence, will be found to do good service. In general, printing in the shade is better than printing in the sun, but if only sunlight is available, then it is well to place a sheet of ground glass upon the printing-frame, the matt side uppermost, an indispensable precaution, indeed, when the cliché has been retouched or stopped out.

*Plateholders to obviate touching the glass with the hands.*—Every one knows that the thumb at the edge of the plate, and the heat of the fingers underneath the glass, are a continual source of spots and stains of every description.



Many kinds of holders have been devised to overcome the difficulty, the ordinary pneumatic holder being that generally employed; but in this case the operator's wrist is



underneath the plate, and there is a good chance of the liquid running up his arm. This defect has been obviated by employing an arm of suitable length, which is fixed to the bottom of the plate-holder. The plate can then be turned in every direction towards the hand used for pouring the collodion. Most instruments require the fist to be under the centre of the apparatus—a most serious drawback. I have devised an instrument much less costly than a pneumatic holder, which leaves, moreover, the cuff of the operator free, and permits of the manipulation of the glass very easily. It is made of light wood, and varnished. A, handle, thirty to forty centimetres long; B, supports fixed to the handle, and made of the requisite size for holding the plate; C, notches or grooves to retain the plate.

### Correspondence.

#### DISSAFFECTION IN THE LONDON PHOTOGRAPHIC SOCIETY.

DEAR SIR,—Before making a few general remarks upon the above subject, allow me to correct a statement made in your reply to "A Country Member" in the News of Dec. 24th, 1873, that "no alteration in the laws had been proposed by anyone, we believe, for upwards of a dozen years.\*" If you will be so good as to refer to the News of Feb. 16th and March 15th, 1872, you will find an alteration to Law IX, in consequence of a letter I wrote to the Council, and referred to by the chairman at the annual meeting, Feb. 13th, 1872, and made law at a special meeting held after the ordinary meeting, March 12th, 1872. The alteration was to the effect that members joining the society in Nov. or Dec. should be entitled to full membership by payment of the guinea entrance fee only; and the result was, that after the next exhibition no less than twenty-three new members were elected at the first ordinary meeting, a clear proof that this alteration of the laws was of a most salutary character; and it may be that these can be still further improved to meet the wants of this progressive age.

May I ask your readers, Mr. Editor, to read an excellent letter from Mr. Hudson, that appeared in the News of the 13th Dec., 1872, and who was one of the twenty-three new members elected on the 10th Dec., 1872.

After bearing testimony to his own observation, even as a non-member, of the beneficial action of the Society, and declaring his resolve to join at once, Mr. Hudson remarks: "Surely, sir, we ought to strengthen the hands of the council of the Society, who take no pecuniary remuneration for their arduous duties, but who certainly, at the very least, ought to receive the grateful commendation of those for whom they labour;" and he concludes by saying that he shall feel himself honoured by association in membership with "men who have the good of the profession (and not their own ends) at heart."

Having been connected with photographic societies myself for fifteen years, and with the London Photographic Society for a great part of this period, and having known the North London Photographic Society in its best days, I feel I am, in some measure, able to judge of the cause of their rise and decline; and my humble opinion is, that the chief detriment to their greater success is the small interest taken in them by the independent members themselves. It is always easy to blame councilmen, secretaries, vice-presidents, and even presidents, but is it not wiser to look at home? All the grievances as at present brought against the Society (whether they be real or not, I am not going to pass an opinion) arise entirely from the apathy of the members, many of whom are continually grumbling, but never act. Why have they always submitted to the dictation of the council? They have full power by Law VII. to nominate fresh councilmen once a year, but the January meeting generally passes off without any action on the part of independent members, and when February comes it is too late, and then John Bull, as usual, grumbles. The January meeting is often a very thin one, and us photographers are known to be gay and jovial, it is very probable they are differently employed during the long evenings of this happy month; but surely this is no fault of the council, who are compelled by the laws to be ready provided with a list a month in advance. How is it that in January there is often a paucity of papers, and in May a plethora? How is it independent members take so small a part in the discussion of the subjects brought forward? And how is it we do not have

papers on more practical matters, such as would enlist the interest and sympathy of all the members? Surely there is no need for such reticence; all have much to learn, and all should be willing to communicate their mite. Let us put aside this apathy, and, instead of grumbling, put our shoulder to the wheel. Let us see whether we cannot improve the tone of our meetings, and pour fresh life into the Society, by helping, both by regular attendance and an active interest in its working, and also by inducing others to join. Is the collodion process perfect? I answer No! How is it we cannot take portraits in smoko towns in winter under thirty seconds? Are we working in the right groove to attain instantaneous photography in all weathers (except foggy)? Are we always to have the trouble of waiting whilst plates are sensitized in a nitrate bath? Have we got the best developer of the latent image that chemistry and science can give us? And is the nitrate bath to be a constant uncertainty, always on the change, and continually requiring rest, and even stronger measures? Is an organic substance in the iron developer really an advantage, or only an idea? Is a preliminary coating of albumen under the collodion film an advantage, or simply an expedient for encouraging laziness and the using of inferior glass? All these questions, and a hundred more, might fairly be discussed, and would certainly draw forth some valuable information. The art is not sufficiently advanced as yet to permit us to lie down upon our laurels, or even to waste time by special meetings to appoint fresh councilmen, when there is every convenience in the laws of the Society for this to be done in the regular and ordinary way.

The "London Photographic Society" has been established over twenty years, is the representative society of the art for this great nation, sometimes called a nation of shop-keepers, &c., but I do hope we shall not waste valuable time in talking shop, and by holding special meetings, unless quite necessary. I do hope all those who have complaints to make will come forth boldly and make them, and let all be cleared up as quickly as possible, and then work together with one grand desire at heart, namely, "the advancement of the art we so much love."—I am, dear sir, yours truly,

Geo. Hooper.

#### THE PHOTOGRAPHIC SOCIETY.

SIR,—The note of your correspondent, relative to the requisition for a special meeting of the Photographic Society of London, most curiously mis-stated the facts of the case. As one of the promoters of the requisition, and one of the first signers, I am able to say that the allegations in that note are entirely false. The requisition was drawn up by three members of the present council, not one of whom had been a competitor for any award at the exhibition, and of whom, only one—myself—was to retire at the next election; and that my course had nothing to do with my being retired will appear from the fact that the movement had begun before the selections for retirement were made by the council, my name being included amongst the retired in consequence of my having taken part in this movement through a letter published in the *British Journal*, advocating it. Of this I have ample assurance. Of the other signatures, three at least were worthy recipients of a medal, and only one, so far as I know, is a disappointed competitor.

The object of this requisition is simply to secure to the Society at large the control of its own affairs more completely and with less trouble than is possible by any operation of the present method of electing officers. Minor objects may have differed in the view of different signers, but all were agreed in this. Some were opposed to any change beyond that involved in a renewal of the council by thirds every year; others, amongst whom myself, regarded it as important that all officers, including president, should be changed at each election, and the honours of the Society thrown open to all of its members, as well as fresh energy infused into the action of the Society, and new influences brought to bear on it. I consider that such a change is the only method of awakening that interest in the proceedings of the Society which is necessary to its efficiency, and is now wanting.

So far as I and those directly associated with me in the movement are concerned, I can respond for our action as being entirely free from any personal motive, any resentment or ambition, and entirely animated by regard for the good of the Society, and the interests of photography. I am not acquainted with all the gentlemen who signed it, and cannot answer for them, but simply for those who originated it.—Yours truly,

W. J. STILLMAN.

[All well-wishers to the Society would feel glad to be convinced that the movement to which Mr. Stillman refers is not influenced by personal motives, and will probably be willing to accept our correspondent's assurance that he is not consciously under the influence of such motives; but we think that he is curiously

\* We should have said no organic or important alteration.—Ed.



unaware of some facts, and that he unconsciously states others in a manner which must mislead. Various communications which have reached us on this subject we have not published because they were of a personal character, the statements in which have varied from those of Mr. Stillman, the paragraph to which he refers being but a summary of a communication giving fuller details coupled with names. One gentleman was named as actively canvassing who was certainly not a member of the council. Mr. Stillman states that the requisition was drawn by three members of council. It was only signed by two, and we must confess that it seems to us a practical solcism for even two members of council to send a requisition to themselves, asking for unusual action to obtain that which, as members of council, they had simpler means of initiating. We are placed in a difficulty by Mr. Stillman's statement that his name was placed on the retiring list of council because of a letter he had written, as, having been present at the council, we know this is not true; but, as a member of council, we hold it a breach of confidence to speak out of the council-room of the transactions. We may, however, say that it was simply for the usual reason of irregular attendance at council meetings that Mr. Stillman's name was placed on the retired list. If Mr. Stillman's "ample assurance" of other facts stated in his letter be based on no better ground than this fact, we fear he is labouring under misconception. His statement that three of the signatories were recipients of a medal is at least misleading, as it would suggest that each of these three had received a medal, whereas the three gentlemen constituting one firm, and receiving one medal, stand as three persons in the signatures. So far as the aims of the requisition are concerned, any step which shall lead to increased efficiency and interest in an already efficient and interesting Society shall have our cordial support and co-operation; but we must confess that the form which this movement has assumed seems to carry on its face certain elements of disaffection and antagonism, quite as likely to lead to heart-burnings as to reform.—Ed.]

#### THE PHOTOGRAPHIC SOCIETY.

SIR,—In thanking you for answers to my recent questions, I wish to make a few more observations. From a paragraph in your last, I glean that the easily imputed, and, I regret to say, commonly imputed, charge of personal feeling is brought against those who are working to secure a modification in the laws of the Photographic Society. The possibility of such an imputation is easily removed, and should be removed at once. The case, as I understand it, stands thus:—It is alleged by the non-contents that the council are ambitious, and, wishful to retain the power of managing the Society in their own hands, that they constantly see the re-election of members of their own body in order to retain that power. It is alleged, on the other hand, that the leaders of the agitation are influenced by selfish motives, being anxious to obtain a seat at the council themselves; and if this were so, lookers-on would be apt to think that, so far as the good of the Society is concerned, the difference between ambitious officers *in esse*, and ambitious officers *in posse*—between ambitious actual councilmen, and ambitious would-be councilmen—is probably much the same as the difference between Tweedledum and Tweedledee, except that those in office have experience, and those anxious to be in have not.

But I have a suggestion to make to the gentlemen who are leading this agitation, by adopting which they may place their motives beyond suspicion, and by which they will, I feel certain, secure the adhesion of all independent members of the Society. Let the leaders of this agitation—say all who have signed the requisition referred to in your last—pledge themselves not to accept office in the first year after the passing of the reformed laws. By such a course they will prove themselves to be actuated by a desire for the good of the Society, and not by personal ambition. If, on the other hand, they seek to obtain the office which they blame the existing council for retaining, they must rest under the suspicion of using a pretence of desire for public good merely as the stalking horse for private ends or personal ambition. Should they pledge themselves not to accept immediate office, I, and I believe many others, will attend any meeting called, and support their endeavours to place the rules on a wider basis. Should they decline to pledge themselves not to accept office, I for one shall also decline to be made a cat's paw to serve the purposes of a few discontented and ambitious men.—Yours respectfully, A COUNTRY MEMBER.

#### DRYING DRY PLATES.

DEAR SIR,—Some time since I raised the question in your paper, "What is a dry plate?" but nothing further was said in

reply than your editorial remark that it meant, not a plate simply surface dry, but thoroughly desiccated; and the interesting letters in your issues of this and last week by M. de Constant on dry plates again leads me to ask for some more definite information.

M. de Constant suggests such methods of drying as will be only of the kind called surface dry; and he says, "The drying of the plates is a most important part of the operation."

Col Wortley says they should be dried by heat, and yet no definite temperature is given in either case. As it is understood that drying bichromated gelatine, for carbon printing, is more sensitive when slowly dried, and the sensitiveness consequently lessened in proportion to the heat employed in drying, so may it not be with bromide dry plates. If any experienced worker will give some information on this point, it would be of much advantage, I am sure, and save much of the conflicting opinion as to the sensitiveness which is really obtained in dry plate work.—I am, dear sir, yours truly, F. R.

#### THE NEW LIME BALL.

SIR,—From the PHOTOGRAPHIC NEWS, I see the lime ball which I invented and introduced here some time ago has caused some little discussion, and many have expressed the hope that it would ultimately prove successful. Experiment, followed by discussion and expression of opinion, is the only way to bring out its merits and defects, by plainly showing what is to be improved, as well as what is already perfect, so that I hope there will be still further trials and further expressions of opinion in the NEWS and otherwise.

I have lately changed or modified both the formula for the balls, and the way in which I manipulated them, so as to avoid defects which, quite apparently to myself, were inherent in both the theoretical and practical part of the original process. I at first used the fine carbonate of lime as the basis, thinking it would yield a more uniform mass, and therefore less likely to split under the heat than the coarser "prepared chalk," and with the idea also that the finer preparation and whiter ball gave a better light. After many experiments I believe I am mistaken.

Making the balls now with the ordinary prepared chalk, I find, after many experiments, that I have not only as good a light, but also a very superior ball, it being harder and more dense, as can well be understood; whilst in all my experiments I have not had one ball that has split with me. They now pit very little—certainly not more than the ordinary lime ball—and they have frequently done duty twice over. I do not wish, however, to uphold them on this last merit; they do well if they serve once, and all I claim for them (and after all it is the one grand feature) is, that they are a ball which will keep under exposure for months or years, and at the end be as good as at first. As to the manipulation of them, I mass them as formerly, but now put the paste into moulds. This gives them a more symmetrical appearance than formerly, and also prevents them cracking in the drying. In the whole process, I need scarcely say, there are little niceties to be observed which can only be gained by experience, but which need present no obstacle to their being manufactured by any one.

I along with this send you one or two for the purpose of showing to any one interested, and I will, further, be glad to communicate with any one, either through the columns of the NEWS or otherwise, as to experiments either with the manufacture or use of them.—I am, sir, yours, &c., WM. GILMOUR.

[Mr. Gilmour has favoured us with some examples of the lime cylinders in question, which we shall have pleasure in showing to any one interested. The actual test of value in such a case can, of course, only be made in the lantern, but, so far as we can judge from appearance, these are excellent, being firm in texture and symmetrical in shape, and suggesting no tendency to crepitation or splitting.—Ed.]

#### Talk in the Studio.

PHOTOGRAPHY IN COLD WEATHER.—A correspondent, Mr. E. Garlick, of Downham, says:—"As I have received so much information through the PHOTOGRAPHIC NEWS, I feel it my duty to send you the following for the benefit of any one who may need it, if you think it worth inserting. By the following method I am enabled to take as good negatives on a dull day as on a bright one. My method is—first, to place the developing-cup, which is a glass measure, on the top of the stove; by the time I have prepared the plate, posed the sitter, and exposed the plate, the measure has got as hot as I can nicely bear it in my hand. I then pour into it two drachms of iron, and start developing at once. As soon as the iron is



poured on the cold plate it is, of course, chilled at once. If the picture comes up all right, why then it is all right; but if the detail shows signs of lagging behind—which is sure to be the case in dull weather—by pouring back the iron again into the hot measure, and letting it stay two or three seconds, then pouring back on the plate, it will fetch up the detail with an effect truly marvellous. By returning the iron backwards and forwards from the hot cup to the plate, you may work up the detail just as you think proper. With a weak developer and hot cup the plate is not spoiled by a few seconds' under or over-exposure, and in its effect turns dull days into bright ones."

**SHUTTER INSIDE THE CAMERA.**—Mr. S. Cornell, of Napier, New Zealand, sends us details of a shutter inside the camera, which he finds very useful, as permitting the lens to be uncovered without distracting the attention of the sitter, a point of great importance with children. A couple of grooves are fixed in the camera immediately behind the lens, in which a shutter slides just sufficiently large to cover the back of the lens. This shutter is attached to a bar at the top of the grooves by two pieces of elastic band, which, when retracted, keep it in position at the back of the lens. A piece of cord attached to the bottom of the shutter passes through the bottom of the camera, and hangs beneath the stand. When ready the operator, unobserved, pulls this cord, which pulls down the shutter, and on leaving go it is drawn back into its place behind the lens by means of the elastic bands, and so closes the lens. The plan seems to be simple and efficient.

**MUSTARD AS A PRESERVATIVE FOR DRY PLATES.**—At a recent meeting of the Photographic Section of the American Institute, the president, Mr. H. J. Newton, called attention to a new preservative for dry plates. He says:—"I have been invading the kitchen again. I mixed some mustard seed with tea for a preservative for dry plates, and found it increased the sensitiveness very much. I took two tablespoonfuls of mustard seed, and two tablespoonfuls of Japanese tea, and poured on eight or ten ounces of boiling water, covered it over, and let it stand and steep for one or two hours. I then added ten grains to the ounce of sugar of milk and filtered through cotton; made up to ten ounces, and added two ounces of alcohol. It was then ready for use. I found that the plates would give the same detail in a minute and a quarter that with the tea alone would take five or six minutes. I found, also, by crushing the mustard seed in a mortar before it was steeped with the tea, that it made a much more sensitive plate than in putting the seeds in whole; but they did not keep as well, and were nearly worthless in two weeks. With the seeds whole it required about two and a-half minutes, and the other way about a minute and a quarter exposure, while, in general, I give five minutes' exposure to tea. I afterwards tried the oil of mustard, but I found it a difficult thing to handle. It is very volatile and irritating, and makes a blister on the skin where it touches, and is trying to the eyes. I took a quarter of an ounce of the oil of mustard seed and put it in four ounces of alcohol, and it made a very brilliant negative. It had the same sensitiveness as the whole seeds."

**REMOVAL.**—Messrs. T. Ordish and Co. have removed from Newgate Street to 108, Hatton Garden.

## To Correspondents.

**A. L. T.**—The mode of enamelling you describe should, with proper care, give certain and satisfactory results; but much depends on attention to small points. In the first place it is very important that the surface of the plate glass should be very perfect, and scrupulously clean. To gain additional certainty of the film leaving the glass readily, treating its surface with wax, as we have often described, is desirable. It is important also that the collodion possess a good body, and be of the kind which gives a tough, horny film, and not a powdery film. By attention to these points you will probably succeed without difficulty.

**AN AMATEUR.**—We do not remember the focus of the lens in question, and cannot, therefore, tell you what distance would be required in producing a card portrait with it—probably about twenty-six feet. We should scarcely think it a lens well suited for card portraiture. If you address a line to the manufacturer, he will probably tell you the precise distance required.

**J. YELNATZ.**—You will find an article on the subject by the gentleman in question in the YEAR-BOOK for 1873. If you will describe the form and proportions of your present studio, we can probably give you some suggestions. It should not be a difficult thing with a good lens to secure portraits in a summer light with ten or fifteen seconds' exposure.

**W. G.**—Your negatives are certainly in a sad mess. The defects may arise from various causes. Some seem to proceed from the use of dirty plates, from which old negatives have been imperfectly cleaned. Others seem to proceed from the use of a newly-iodized collodion, with insufficient bromide to permit cleanly working whilst new. One negative seems chiefly to suffer from pinholes arising from an over-iodized bath. As you do not send any particulars of the mode in which your bath and other solutions are prepared, nor any specific history of your troubles, we can only advise you generally. Letters sent some weeks ago are not preserved, and we cannot, of course, remember from time to time the precise troubles of many scores of correspondents. Read article in present number on winter photography; and when you write again, give us fuller particulars of your operations, and of when and how your troubles arise.

**LORD RAYLEIGH.**—Many thanks. We shall have pleasure in shortly testing the grating you are good enough to forward, and which was duly received.

**E. SMITH.**—It is difficult, without having a precise statement, to suggest at what point they are wrong, but it is clear that they are so somewhere. The portion of your gelatine film which should be insoluble appear to be soluble, absorbing water and repelling greasy ink; and the portions which should do this appear to be insoluble, and take greasy ink, giving a reverse image, and that of a very imperfect kind. If you describe your operations in detail, we may possibly aid you by a suggestion. There is no work on the subject, and almost every operator's practical knowledge is gained by personal experience in working out published formulae.

**M. T. R.**—Imperfect fixation. During frosty or cold weather it is wise to slightly warm the fixing bath. In making a fixing bath you may notice that as the hyposulphite dissolves there is a great fall in the temperature of the solution, which becomes much colder than the water used in making it. Use hot water for preparing the bath, and immerse the prints in the solution while still slightly warm. There is great risk of imperfect fixation when the solution is very cold.

**R. G.**—It is one of the defects of the method of intensifying by means of mercury that it often leaves the film so porous that the varnish makes it nearly transparent. Much depends on the character of the image as to whether it can be intensified after varnishing. If the film be white or grey, the result of treatment with bichloride of mercury alone, without iodide or sulphide afterwards, then first moistening the film with alcohol and applying a weak alcoholic solution of iodine will convert the image into a yellow one, which will give it printing value. It is possible, also, to wash the varnish partially or totally away with alcohol, and intensify with alcoholic solutions of pyro and silver, which take better under the circumstances than aqueous solutions.

**B. F.**—A good quarter-plate lens will answer very well for enlarging from card size up to twelve by ten. We should recommend you to try the enlarged negative principle.

**A. M. C.**—We have described modes of vignetting in the camera several times. A simple method consists in making a screen of cardboard (say twenty inches by fourteen) with an oval aperture six or eight inches long, with serrated edges. This placed at a suitable distance in front of the lens will vignette the figure, and give the irregular edges of the oval aperture sufficiently out of focus to produce a vignetted effect. A light grey background should be used, and the screen may be of a light grey or white. If the screen be moved a little during exposure, the result is better still. The result is a vignetted negative which prints vignettes without trouble. This method deserves more attention than it has received.

**N. T.**—So far as we are aware, Jacoby's printing frame has not been introduced into this country; but it should not be difficult to make a frame for a similar purpose.

**BICHROMATE.**—In referring to any formula which has appeared in our pages you should give a specific reference. Captain Waterhouse has contributed many articles on the subject, and we cannot refer without knowing to which you allude. So far as we can see, adding the bichromate to the solution would answer as well as soaking the film, although it is probable that Captain Waterhouse has some good reason for recommending the latter course. The gelatine film, after exposure, is to be washed with cold water, using two or three changes. No specific length of time for washing can be given; but you will know when the last washing water has no trace of yellow that all the free bichromate has been washed out of the film.

**LUX.**—Difference of opinion prevails as to whether there is some specific accelerating value in coloured light, or whether it merely serves as giving a regulated amount of diffused white light, some white light being generally mixed with coloured light. Various plans of obtaining a small amount of white light under strict control have been tried. A very simple one consists in exposing the plate in the camera for a few seconds to a dark background before exposing it on the sitter.

Several Reviews and other Articles in type are compelled to stand over.

Several Correspondents in our next.



# The Photographic News, January 16, 1874.

## THE BEST WAY TO MAKE ENLARGEMENTS.

BY B. J. EDWARDS.\*

In opening the discussion this evening, I propose to say very few words on the subject of "direct pictures *versus* enlargements." The arguments in favour of enlarging from small negatives have been so ably stated by Mr. Croughton, in his paper read to you at the last meeting, that I have little to add, except to call your attention to one important advantage in favour of enlargements which Mr. Croughton has entirely overlooked. I allude to the power of securing at will that diffusion of focus so essential in a large picture. It is well known that owing to optical difficulties it is impossible to produce large direct portraits with anything approaching perfect diffusion of focus in the various parts of the picture, notwithstanding all that has been done by our best opticians in getting rid of the painful sharpness in one plane caused by over-correction in large lenses. A large portrait taken direct in the camera must always, in the nature of things, be considerably out of focus in some more or less important parts of the picture. By adopting the plan of enlarging, no such difficulty exists; provided the original negative be tolerably well defined, any amount of diffusion can be readily obtained at the will of the operator. I shall have the pleasure of showing you some examples of this in the negatives I have brought for your inspection.

With regard to the best way of making enlargements, this is a matter to which, as you are aware, I have devoted a good deal of study and attention. I think I may claim a large share in forcing the subject upon the notice of photographers, having been, perhaps, the first to demonstrate before the members of this Society that enlarged negatives could be made to produce prints equally as perfect as the originals. It is, however, with much diffidence that I offer any remarks this evening, inasmuch as my process is what is termed a "secret process." I have never myself so called it, and I think you will agree with me that as it is already in the hands of more than two hundred professional photographers in this country, it is hardly entitled to be termed a secret process. My desire is, that it should be still more widely known. I should like to have every intelligent photographer in the kingdom for a pupil and a subscriber. I have, however, no wish to make this Society the means of a trade advertisement. The fact that a member of our council, who is also professionally engaged in making enlargements, has so eloquently advocated his particular views as to the best way to make enlargements, must be my excuse for the few words I shall offer. While I cordially agree with Mr. Croughton on the many advantages of enlargements compared with direct large pictures, I must entirely differ from him as to the best means of producing the desired result.

Mr. Croughton, in his paper read at the last meeting, did me the honour to quote some observations of mine on a former occasion, in which I pointed out that he was in error in two important points in his method of working. He also, I understand, showed examples of his "double mistake." I have not had the pleasure of seeing those results, and must plead guilty to the charge of still holding the opinion that the method advocated by Mr. Croughton is wrong, both in theory and practice. First, with regard to the use of wet collodion for the immediate transparency, or positive cliché (I use the French term as being more expressive and appropriate), throwing aside the plea urged by Mr. Croughton "that it is so very convenient," I need only point out that for many years the ordinary wet process has been used for this purpose; it has been the rule, almost without exception; and yet it is only very recently that enlarged prints have been shown which will at all

bear comparison as untouched photographs with the prints from the original negatives, and in every instance where the untouched enlargement is as perfect as the small print, I will venture to assert that the positive cliché, no matter what process was used in its production, was not made on wet collodion. Why this is I shall not now take up your time in discussing. I have a theory on the subject which I may at some future time indite upon you; at present I will simply state, as the result of my experience, that in order to produce the best results, the transparency or positive cliché should be so perfect in texture that no human hand, not even the skilful fingers of a professional retoucher, can hope to mend or patch its exquisite gradation.

Mistake No. 2 consists, as I have said, in retouching an enlargement when the work required can be done better and quicker on the small negative. This subject of retouching is a difficult and much-vexed question; it seems impossible to determine how much or how little is a fair and legitimate part of the photographer's business. My maxim is, do no more than is absolutely necessary. We should all be glad to do without the retouching pencil altogether, and produce absolutely perfect negatives direct in the camera; but, as Mr. Croughton plaintively observes, "people will have freckles and blotches," and they must be got rid of by some means. But how? Mr. Croughton's advice is, first make your freckles and blotches from four to sixteen times larger, and then proceed to fill in or touch them out in the enlarged transparency. On the same principle, I suppose, a tailor, in order to mend a rent in a coat, ought previously to make the hole sixteen times as big, and then proceed to mend or patch it. I confess I cannot understand what advantage would be gained, unless the object be to show the patch. There is yet another reason why retouching should not be done on the positive transparency. It is well known that freckles and blotches, owing to their non-actinic colour, invariably photograph darker than in nature. How this can be remedied by adding more colour or black-lead without degrading the other and purer parts of the picture I must leave to Mr. Croughton to explain.

One word more on the subject of retouching. A curious misconception seems to have arisen as to the amount of retouching used in the pictures I had the honour of showing at the last Exhibition. I have this evening brought you a number of the large negatives, that you may judge of the amount of labour expended in this direction. I have also brought untouched proofs from the same. You will notice that, with one or two exceptions, the negatives are almost untouched. The enlargements being made from ordinary card negatives used for silver printing, and not made specially for enlarging, any good printing negative will make a good enlargement; the peculiar effect of fine finish which appears to have deceived other good judges besides our friend Mr. Croughton being due to the nature of the transparency and the method of producing the enlargements.

## THE PROGRESSIVE RESULTS OF THE PAST SESSION.

BY JOHN NICOL, PH.D.\*

I FEEL very much inclined to ask you to turn up to page 27 of last year's volume of the *British Journal*, and take what you will find stated there of 1872 as equally applicable to the year just closed. So little real progress has been made, either in the theory or practice of photography, that I really think this paper should have remained unwritten. I suppose, however, that there is in the Edinburgh Photographic, as in many other societies, a certain degree of conservatism which is unwilling to allow any time-honoured habit to pass away, even when the causes which brought it

\* Read before the South London Photographic Society.

\* Read before the Edinburgh Photographic Society.



into existence have long ceased to be; and, recognising the duty of obedience to those in authority, I consider the request of our secretary equal to a command, which I hasten to obey.

Collodio-bromide has, as usual, occupied a large share of attention, but little that is new has been brought to light. The necessity of a suitable pyroxylic has become more generally believed, and the conditions necessary for its preparation are better understood. Probably the greatest step in advance has been the introduction, by Col. Stuart Wortley, of his strong alkaline developer. It passed off, as most good things do, at first with comparatively little notice; but gradually it began to find favour, and is, I should think, now adopted by all emulsion workers, and, if I may judge from my own experience, those who give it a fair trial are not likely to give it up.

Mr. Sutton has written, with a zeal worthy of a better cause, in favour of his moist bromide process. Since its introduction he has hardly allowed a number of the *British Journal* to pass without some allusion to it, and I really was glad when I read his letter of December 12th, in which he promises to "drop the subject." If we are not able to progress, don't let us retrograde—as we should certainly do if we return to the moist messes of a bygone period; but of that I have little fear, as I do not think that any man who has mastered dry-plate work, and who can produce the exquisite results that it certainly can be made to give, will ever think of messing with a moist film.

How many photographers continue to lose their tempers and their time over fogged plates, by trying to develop in a light that contains too much actinism! And how often do we hear the question, "What kind of glass is best suited for the dark-room window"? If those unfortunates would only read the short letter of twenty-three lines, written by P. Le Neve Foster in the *British Journal* of January 10th, 1873,\* and invest a few pence in a very common prism, their troubles would vanish like mist in sunshine.

The question of shortening sittings by primary or secondary exposure under coloured glass, continued during the early part of the year to attract some attention, but I don't think Mr. Newton has made many converts.

My own experiments seem to show clearly enough that the only benefit derived from such exposure is the slightly fogging of the shadows, which prevents an under-exposed negative from printing so intensely white and black as it would otherwise do. This of course is a real gain, but it is better to attribute it to the proper cause.

The introduction of gelatine as a substitute for collodion in the emulsion process is deserving of particular notice. Although no really workable process has been published, there is no doubt that it contains all the elements of success, and I have no doubt that before the year is ended it will take a high place amongst dry processes. I would, however, direct special attention to Mr. Sutton's suggestion to make sheets of sensitive gelatine bromide tissue. This is, I think, not only practicable, but likely to become of the most valuable suggestions that has been made since Archer hit on collodion. I hope all who have time will turn their attention in this direction, and that before the season for field work comes round, such tissue will be a recognised article of commerce. If I were disposed to don the prophetic mantle, it would be to say, that if I am spared to write the "progressive results" of 1874, I shall have the pleasure of showing that the problem of instantaneous photography has been solved by the happy union of Sutton's sensitive tissue and Wortley's strong alkaline developer.

I am sorry to say that the question of how to make permanent sensitized paper is not yet solved. There are now several makers in the field, but they keep their methods to themselves. The subject is surely worth the attention of experimenters, and cannot be so difficult as to deter them from the investigation. I wonder whether, if the various

photographic societies throughout the country were to join in offering a suitable medal to the discoverer, we should get the desired information, and think it is worth a trial.

In carbon printing there has been nothing of importance new; but a large increase in quantity, considerably improved in quality has been done by the now well-known methods, and there can be little doubt but that ultimately silver printing must go to the wall. In connection with this matter, mention may be made of the two processes introduced by the late M. Marion, in the middle of last year. They seem, however, to have been unworkable, or at least to have died with their inventor.

This review would hardly be complete without including a word or two about the Crawshaw prizes for large heads. The exhibition of prize pictures gave rise to a little ill-feeling, and a good deal of stupid writing, but, on the whole, it must have an influence for good. Direct large pictures are worthy of more attention than they have yet got, and I have no doubt that next exhibition will show much improvement in quality, and I hope also in quantity. If, however, the competing pictures are to form part of the Photographic Society's Exhibition, I would strongly recommend the council to consider whether it would not be advisable to limit each exhibitor to three specimens; too much of even a good thing is never good.

And now, in conclusion, let me bear a humble protest against what I cannot help calling a desecration of our art in high places. I allude to the widely published information that the Shah, while residing as our own guest, in one of our royal palaces, found a photographer who, instead of obeying the good old injunction to "remember the Sabbath day," did not disdain to take rank amongst those Pariahs of our art, who by their unblushing open desecration of the Sabbath, do their best, or rather their worst, to bring disgrace on a noble profession.

## PROCESS FOR PRINTING ON WOOD OR CANVAS.

BY T. C. ROCHE.\*

The following formula will be found useful to wood engravers, or to those who are photographing on wood. To prepare the block for the sensitive coating, make a thin solution of gelatine, six grains to the ounce of water, mixed with some gilders' white; coat the surface of the block with this, using a wide camel's-hair brush; when dry, brush over the prepared surface in the dark room some of the following solution:—

- |                            |     |            |
|----------------------------|-----|------------|
| 1.—Red prussiate of potash | ... | 120 grains |
| Water                      | ... | 2 ounces   |
| 2.—Ammonia-citrate of iron | ... | 140 grains |
| Water                      | ... | 2 ounces.  |

When dissolved, mix together and filter. This solution should be kept in the dark. When the coating has dried, expose under a negative in sunshine for ten or twelve minutes, then take the block where the light is not very strong, and wash the surface lightly with a soft sponge in water, and a beautiful dark blue picture will appear that will not chip in cutting.

To make a red picture, prepare as above, but use the following mixture:—Dissolve twenty or thirty grains of sulphate of uranium in one ounce of thin gum-arabic or gelatine water; brush this on the block or canvas in the dark room; when dry, expose under a negative for ten to twenty minutes in sunshine, then wash well with a sponge and water; now take a clean sponge charged with a solution of red prussiate of potash, twenty grains to the ounce of water, and apply it quickly all over the surface, and the picture will appear immediately. When all details are out, wash clean with a fresh sponge and water. A drop or two of muriatic acid in some water will bleach the picture if over-printed.

\* The readers of the *PHOTOGRAPHIC NEWS* were familiar with this years ago.

\* *Anthony's Photographic Bulletin.*



## A NEW TEST FOR HYPOSULPHITE OF SODA.

BY W. H. SHERMAN.\*

FIRST prepare the following solution:—

Bichloride of mercury ...	1 ounce
Chloride of ammonium ...	175 grains
Water ...	8 fluid ounces.

Dissolve, and add one fluid drachm pure hydrochloric acid.

Now perform the following experiment. Into a test-tube that will hold five or six fluid drachms drop a single drop of a ten per cent. solution of hyposulphite of sodium. Fill the tube with water, shake well, pour out the water, and let drip until none of the liquid remains excepting what adheres to the glass; again add one or two drachms of water, shaking as before; to this add a few drops of the mercurial solution, and observe the change of colour which will take place. A slight blue colour or opalescence will make its appearance, due to the minute quantity of hyposulphite remaining after the rinsing above described. Evidently the quantity is very small, and the test must be conducted with nicety. The glass must be scrupulously clean, and the water clear. It is also well to practise the eye by holding another similar vessel containing only clear water beside the one under inspection. One curious in such matters will be tempted to try other experiments. Presuming that the change in the colour of the liquid is owing to the formation of the hyposulphite of mercury, he will be quite apt to try the corrosive sublimate alone. This he would find to be less sensitive. The addition of the sal-ammoniac forms the mercuric double salt  $\text{HgCl}_2 \cdot 2\text{H}_4\text{NCl}$ , and the hyposulphite converts the mercury into the sulphide.

But what is the use of the hydrochloric acid? Answer: If the water used in the experiment happened to contain carbonates (hard water), carbonate of mercury would be formed, and this would produce turbidity similar to the hyposulphite. The acid prevents the formation of the carbonate mentioned, but does not interfere with the formation of the mercuric sulphide.

Having prepared the test solution as above prescribed, and having become accustomed to its most delicate indications, proceed to apply it to practical use in detecting the presence of hyposulphite in the prints as the work of washing progresses. It will be interesting to note the persistence with which this pernicious but indispensable salt maintains its presence in the paper. After washing the prints, until the water shows no signs of a remaining trace, place a few strips of the paper in a little water, and subject to a gentle heat. This trouble will be repaid by its again manifesting itself to the test.

The less of the hyposulphite left in the prints the longer they will last. In practice it is never completely removed by washing. The remaining portion is the remote cause of fading. Sooner or later sulphur is liberated, producing the characteristic yellow colour. Oxidation of the sulphur produces an acid, which becomes the immediate cause of fading. Every time the hyposulphite is used another unstable substance is added to the solution, to wit, hyposulphite of silver. This being less stable than the hyposulphite of sodium, the longer this bath is used the worse it becomes. In consequence, the land is filled with fading photographs to the disgrace of the art.

## HOW TO BUY A LENS.

BY W. J. BAKER.\*

WE fully subscribe to the almost axiomatic proposition that "the best is the cheapest;" the cheapest either to buy or to sell, and especially the cheapest when it comes to a matter of so vital importance as a lens.

Some time ago we had occasion to test some lenses for a friend and for ourselves, both small and large sizes, and resolved to have the cheapest at all hazards, even if it cost half or twice the money. The tests applied were comparative and practical, and in our own case served to eliminate doubts that had been raised by the conflicting claims of "first-class" makers.

We give below a resumé of these tests, and any who choose to apply the same, or similar ones, will no doubt arrive at conclusions which, if not the same as ours, will be satisfactory and convincing, and enable them to purchase with a clear understanding.

It will only be necessary to describe the trials of the larger lenses, as the same method was applied to the smaller ones, and with the same result.

We started with no fixed ideal which the performance of the instruments was to equal. We did not expect a mammoth to "cut" in the same proportion as a  $\frac{2}{3}$  or 2B. Knowing something of the rapidly increasing ratio of imperfections that have to be equalized and corrected,\* we resolved to be contented with the best that leading opticians offered; and here we will say that, as far as we can, we shall refrain from indicating who the makers were, as this is not the part of the book in which advertisements are legitimate. Look for those near the covers, read them, and then find out for yourselves how much or little truth there is in them.

The lenses will be designated as A and B. A was made to order, subject to approval. B was one of a number of the same size ready made.

Test first, of price. A cost over fifty per cent. more than B.

Test second, for whiteness of glass. The lenses were unscrewed and placed side by side on white paper. B proved to be of much clearer, whiter glass than A, which had a rather yellowish-green tint.

Test third, for comparative ratio of aperture to focal length. B was by measure a fraction of an inch larger in diameter than A. The focal lengths were obtained by measuring the distances of the image from the object (dots twelve inches apart on white card); the image was in each case made the same size as the object when focussed with the full opening. Had a small diaphragm been used there might have been an error, as in this case there is some latitude in focussing. The distances when quartered gave pretty nearly the equivalent solar foci. B had a somewhat longer focus than A, but in each case there was about the same ratio between the squares of the apertures and the focal lengths respectively, from which it might be expected that they would work in nearly equal times, while the superior whiteness of B would be an element in its favour.

Test fourth, for actual times of working. This test was very carefully conducted, repeated several times on different days, always about noon, with a clear sky. A still subject in half-tone was used, and care taken to distinguish between an increase of intensity, which might make the detail in the shadows more apparent, and actual amount of detail obtained with similar and dissimilar exposures. These trials showed that A, with forty seconds, equalled B with forty-five seconds, a difference of but little practical value.

Test fifth, for definition, made by copying an engraved head of four inches length to the same size with full apertures. Very decided in favour of B.

Test sixth, for flatness of field, made by copying a newspaper to actual size, and by pushing in the ground glass till the centre letters were barely sharp. Much in favour of B, which had a field of sharp letters almost double the linear extent of A, though it was surprising how small the extent of apparently flat, well-defined field was in either

\* *Photographic Mosaics.*

\* The spherical aberration increases as the square of the aperture, the chromatic as the cube.

case. When, afterwards, the lenses were tried on standing figures, the comparison had the same result.

Test seventh, for marginal definition, conducted with the newspaper as above, by focussing as sharply as possible the letters that came on the outside of the field. A was nowhere with B in this test.

Test eighth, for depth. This we have always, by theory, held to be a quality decided, other things being equal, by the ratio of the aperture to the focal length, and these trials only convinced us of the correctness of that opinion, as there was no perceptible difference. A finely engraved card was focussed, and then slid to and from the lens on a line, as nearly as practicable, coincident with the optical axis of the lens.

The above seemed to include all the important qualities of portrait lenses valuable in practice, and, to recapitulate, gave tests first, fourth, fifth, sixth, and seventh in favour of B; tests third and eighth neutral; test fourth in favour of A, so slightly that we formed in our mind the conviction that while the "best is the cheapest," the highest priced is not always so.

### PORCELAIN PRINTING WITH COLLODIO-CHLORIDE.

BY CHARLES W. HEARN (YOUNG PRINTER).\*

In preparing for porcelain printing see that you obtain good flat plates, which are totally free of any roughness that will eventually spoil the looks of the finished porcelain print. Great care should be exercised in this primary operation, as the result depends in a great measure upon it. If any plates should be curved, but otherwise good, use the convex side for flowing the collodion on, and then perfect contact will be insured between the negatives and porcelains. The cleaning of the plates can be done very nicely by any of the usual methods now in vogue, such as to first immerse them for a day or two in a strong solution of concentrated lye, and then afterwards in a solution of nitric acid one ounce, and water six ounces. Only varnished plates need to be placed in the lye solution, acid and water being all that is required for new ones.

*Albumenizing Solution.*—Take the whites of perfectly fresh eggs, and beat to a stiff froth, let stand over night, decant, and to every ounce of albumen add five ounces of pure filtered rain or distilled water and enough liquor ammonia to give the solution a slight smell of the vapour. Filter with great care; and when a porcelain plate is thoroughly rinsed of the acid water, and well drained, pour a little of this filtered solution on; and after draining in the sink, flow again, and let the plate dry spontaneously, and away from the least draught of air.

*Porcelain Collodion.*—A. Plain Collodion. Alcohol, seven ounces; ether, nine ounces; gun-cotton, seven and a-half grains per ounce.

B. Crystallized nitrate of silver, one ounce; distilled water, one ounce.

C. Chloride of calcium, thirty-two grains; alcohol (95 per cent.), one ounce.

D. Citric acid, thirty-two grains; alcohol (ninety-five per cent.), one ounce. Mix exactly in the manner described below.

Take four ounces of A (plain collodion), decant carefully in an eight or ten-ounce bottle; now add thirty-two drops of B (silver solution) to the plain collodion, adding to or three drops at a time, and shaking well between each addition; now add, more carefully still, about a quarter of an ounce of C, adding one, two, or three drops at a time, also shaking well between each addition as above; add in the same manner a quarter of an ounce of D. This collodio-

chloride is very reliable, and after it has been standing a few days it will work beautifully, indeed it has done so in an hour or two. Flow the plate carefully, let set, and place it in the fuming-box, and fume with strong aqua ammonia three minutes; dry by gentle heat, and after cooling gradually it will be ready for printing purposes.

The Lochman's porcelain printing-frames are undoubtedly the best that has ever been introduced, on account of its superior advantages, although the Chapman's frame are very good, and perhaps more in use than the former. Print considerably darker than you would do to a paper print, and before washing the plate flow back and forth over the plate a solution of common alcohol, until the print has red up to a beautiful color, which it would do in a very few minutes. Wash well under a gentle stream of water, until the free nitrate has washed off, which can be easily ascertained by tasting the drops that fall from the plate. Do not wash too long.

*Toning.*—Take fifteen grains of Wing's chloride of gold, and add fifteen ounces of pure distilled water, and label "Stock Gold Solution." Take of this stock about a dozen or fifteen drops, and make alkaline (slightly) with bicarbonate of soda, and then add about five ounces of water to the whole; let stand in the light for about fifteen minutes, and then tone in a quite weak light, and until the face of the porcelain print looks clear and slightly blue, even if the draperies are quite red, for the porcelain is toned when the face is blue. Unless you have had considerable practice in toning by hand you had better tone the porcelain in a shallow dish.

*Fixing.*—Saturated solution of hyposulphite soda, one ounce; water, ten ounces. Fix ten minutes, by which time the face has returned to the tone you toned it, and then it is a success if there has been no mistaken calculation as regards depth of printing, &c. Wash thoroughly in changing water for about two or three hours; dry and tint with dry colours, the least trifle more than what you wish it when finished, for in varnishing a little of the colour disappears; when there is simply tinting of cheeks and lips to be done, I prefer to do it by dry rather than by water colours. The colours can be put on after varnishing if desired.

*Varnishing.*—When you are ready for varnishing the plate, warm it slightly, and varnish it with a filtered solution of pure white shellac varnish, and it will give you as firm and glossy a surface as you can desire.

The above is my method of making porcelains, and which I find very successful in the majority of cases. The only great failures in porcelain making are, first, the collodion is not good; and second, they are not toned properly. Do not expect to obtain the very best results with porcelain collodion just made up, especially if carelessly so, and with the exercise of poor judgment in printing and toning.

In making porcelains, do not be discouraged, but strive to overcome all difficulties, for ultimate success will more than repay you for your trouble. Remember, "If you don't at first succeed, try, try again."

### NOTES ON PHOTOGRAPHY IN THE ARCTIC REGIONS.

BY LIEUT. CHERMSIDE, R.E.\*

We next set to work to discover our causes of failure; and as a history of our gradual progress would only be wearisome, I will merely inform you of the results as regards the bath and other solutions when I treat of each separately further on. On the 12th, after a hard day's work on the ship and from the shore, in our passage to which we had often to haul the boat over ice, we had so far advanced as, after failure, from the ship's motion, in getting any but blurred images,

\* *Photographic Mosaics.*

\* Continued from page 16.



to take an instantaneous photograph, or, as I know that term is incorrect, one with as short exposure as we could give. The film of this subsequently came to grief; but the portion of it left uninjured has given a print which I have here to-night. Our next few negatives were ruined through our losing the films by their cracking in this way, either in washing or drying. When this difficulty was overcome, there only remained to varnish the negatives: this for a time puzzled us, as we almost invariably got a matt surface, for which we could not account; and when we had succeeded in varnishing with a clear surface, until new difficulties with our bath commenced, we had attained the partial success which enabled us to bring back the negatives that we have; and faulty though they doubtless are, I do not think any defect but that of stains from the bath solution running back over the film is attributable to the conditions of photography in the Arctic regions. When it is remembered that you often may have to swing down a hanging rope ladder from the bowsprit with your slide; to place it flat on the snow, on account of the wind, while you shift the camera; to row in a boat against a stiffish sea, placing it wherever safest; to drag the said boat, slide, and all out of the water, and over ice, to hand back the slide up the ship's side, it is hardly to be wondered at that it is sometimes almost impossible to keep the plate continually in the same position it is in the camera; and when one of these compound journeys must be undertaken, the best way seems to be to protect the plate as much as possible with blotting paper, and, wrapping up the slide in a focussing cloth, to let it take its chance.

Indeed, it is often the best and quickest way for one to remain on board developing and preparing plates, and sending them off by some of the sailors, while another of the party sets up the camera and exposes the plates as he receives them. The sailors used to take a great interest in our proceedings, and to carry the "cambr," as it was called, with great reverence; the slide, too, as containing the picture, was an object of great curiosity, and when entrusted to their care to be taken back, the appearance of the negative more than once proved that they had taken a peep at it during carriage. I have here a print from a negative so treated; but a horizontal dark band across the sky was luckily the only injury it received.

I will now proceed to consider more in detail the various difficulties we at first experienced, and the remedies adopted.

It seemed evident from our first day's work that our failure was not in any great degree attributable to our bath or collodion, as the plate on removal from the bath was covered with an even opaque film, although, possibly, from the low temperature of the bath, the bromide of silver was not completely formed. This might, of course, injure the sensitiveness of the film. Our failure must therefore, we concluded, be in our developing solutions; and we considered that this was owing to two causes—namely, the low temperature at which they had been prepared and kept, and the water used in making them up.

This water was from the ship's tanks, and, though twice filtered, from the recent lime-whiting of the tanks it still contained large quantities of lime and other impurities; and those present in the developer, when poured over the film, formed with the free nitrate of silver upon it flocculent precipitates of carbonate and chloride of silver.

Water was next boiled and filtered, and we managed to rig a large earthenware filter, which proved of the greatest use. Where distilled water was required we used water from the condenser in the engine-room; and when filtered to remove greasy matter this served our purposes well enough. The only remaining difficulty with water was one we never quite got over—that is, to prevent its splitting the films in washing; but applying it at a temperature of from 60° to 70° Fah. greatly modified this danger. I will now describe, in each of the processes necessary for the production of a negative, the peculiarities that struck us.

First, as to cleaning plates. I should advise any one likely to practise photography in high latitudes to take a large supply of clean plates covered with albumen, as they will then be always ready; whereas plates cleaned in the ordinary way will not keep clean up there for more than a few hours. It was almost impossible to get a plate satisfactorily cleaned—at least, to get the moisture to fly off it as it should—even with the use of a stove, as when it had been allowed to cool, from the great difference of temperature, the breath readily condensed on it again. The lenses are also particularly liable to become clouded over, and it is often necessary to unscrew them and wipe and clean them on both sides immediately before taking each photograph. After continued rubbing, the plates remain for a long time electrified, attracting light substances for some minutes, and when coated in this state, or at all hot, seem to exercise a repellent action on the film of collodion.

The collodion used was Thomas's bromo-iodized, and this worked well all through; and the difficulty of preventing films splitting in washing after fixing, and in drying, was equally observable with two other collodions that we tried.

This could not, I think, be owing to excess of ether, as we for some time kept a bottle containing collodion unstopped at a temperature above 45° Fah., and added alcohol to it, and also, as density was our desideratum, a considerable amount of iodizing solution was added in order to overpower the bromide, but with little effect. We could, indeed, easily afford to sacrifice some of the extreme sensitiveness we found existing in the films for increased density, and, probably, had we had any pyroxyline to add to our collodion, we should have obtained the desired result. A specially prepared collodion, manufactured with pyroxyline and papyroxyline rather in excess of the usual quantities, would doubtless give the required density and toughness of film. I have, moreover, little doubt that it would be worth while, in high latitudes, to use for many subjects a simple iodized collodion with an iron developer.

I now come to the sensitizing bath. We used Thomas's bath solution, made up by Thomas, and as soon as we found the necessity of an even temperature it worked well. It was never permitted to freeze, being kept continually in a warm place; notwithstanding which it became rapidly impregnated with ether and alcohol. It was then heated and filtered; it could not be boiled, owing to the want of a vessel for the purpose. This operation had often to be repeated, and this filtration at any rate counteracted the effects of over-iodizing. When alkalinity occurred, fresh solution was substituted, as unfortunately we had no nitric acid with us. When, however, all the solution had been used, we were perforce obliged to commence doctoring and experimenting. Crystals of nitrate of silver were added without success, and then a weak solution of cyanide of potassium was tried; next acetic acid, which at once formed acetate of silver, and made matters worse than ever; we then experimented with all the acids we could find in the medicine-chest—citric, tartaric, &c.—but as none succeeded, it is not worth while describing their effects.

For the remainder of the time we used the bath solution in a shallow dish, rejecting it as soon as it got out of order; and this, I imagine, from the great absorption of ether and alcohol that takes place from the effect of the climate, would prove the most satisfactory, as well as economical, method. From five to eight minutes was the time adopted for immersion in the bath, except when plates were sensitized a long time prior to development, when they were removed as soon as all greasiness disappeared, and would then keep for over an hour. Indeed, in those regions wet plates will keep a very long time without injury.

(To be continued.)

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## THE PHOTOGRAPHIC SOCIETY.

IT was a somewhat unusual sight for the members of the Photographic Society to see, as they did on Tuesday evening last, any of its members in antagonism with the Chairman, and not less unusual for a series of counter-nomination lists handed in, proposing members of council for election at the annual meeting to be held next month, the house-list issued by the Council having been accepted without opposition for many years past. It was almost a pity that a jarring chord was struck at the outset on a petty formality as to the record of minutes, as it tended to give a tone to subsequent proceedings by no means necessarily belonging to them. The presentation of members' nomination lists proposing other candidates for vacancies in the council is an act as simple and as legal as that of the council in putting forth their list at the previous meeting, is thoroughly provided for in the rules, and is, indeed, the only method of securing the carrying out of the first provision in the law relating to the election of officers, which is directed to be conducted by ballot, and without competing lists it is clear that there can be no ballot. It is clearly open to any member to object to inaccuracy or incompleteness in the minutes; but it was obviously inexpedient that a gentleman who was not present at the meeting, and therefore only knew of its proceedings by hearsay, should have undertaken the office of correcting the minutes. That Mr. Stillman was quite single-minded and free from anything like *malus animus* in his objection, we are quite satisfied; but the fact that he could not speak from personal knowledge, and that he tendered the report of what the Chairman styled a "commercial journal" as evidence, was most unfortunate, as it compelled the Chairman to decline his correction, and to refuse the report as evidence against the minutes of the Society. The reports in commercial journals, we will venture to affirm—and we feel assured that our remark would be endorsed by the President—are generally both interesting and accurate, and it is to the interest of photographers that they are independent rather than official. But this fact disqualified any journal from being presented as evidence from a gentleman who knew nothing from personal knowledge of its accuracy. Further, it should be remembered, in any case, that a report of proceedings in a journal is a much fuller, as well as a less formal, record of proceedings than "minutes" can by any possibility be expected to present, and the absence of something from the latter found in the former is by no means an evidence of inaccuracy on either side. The matter was, however, easily set right by the courteous and temperate interposition of an explanation by Mr. Sawyer, as a member who was present, and the missing minute was supplied.

A stricter adhesion to the rule relating to nomination of officers would prevent the slightest approach to the appearance or expression of antagonism when counter-lists are presented. The rule provides that in the event of the list proposed by the Council in the December meeting not proving satisfactory to members, any one shall have the opportunity of proposing a fresh list at the January meeting, the ballot being taken at the annual meeting in February. The mode of nominating a fresh list is prescribed, a written list is to be delivered to the Secretary at or before the January meeting. This, strictly carried out, would obviate, as it is clearly intended to do, the invidiousness of any individual rising in a meeting to make such proposal, as well as the chance or necessity of discussion or antagonism. Personal nomination being thus rendered unnecessary, any member in town or country possesses the power and opportunity of proposing members of council by writing a letter to the Secretary in time for the January meeting. The names so proposed will then be read by the Chairman to the meeting. Speech-making or explanation is so rendered unnecessary; as the Chairman observed on Tuesday evening, every member being strictly within his right in making such nominations, is not called upon to give reasons for so doing. The practice here referred to has been so long in abeyance it seems probable that many members have scarcely understood their privileges and duties in the matter. As it is probable the rules will shortly undergo revision in relation to such elections, a perfect knowledge of the existing rules loses something of its importance now.

There is another point in connection with these nomination, not without interest. They include a number of able and estimable men, any one of whom will make an eligible council man. But it is noteworthy that every one of the lists retains some of those nominated by the council at the December meeting, one of them retaining all the names but two, and, as there are but seven elections to be made, it is apparent that no very serious divergence of opinion prevails between the council and their quasi opponents.

There are also one or two curious anomalies, in appearance at least, in some of the lists. In two of the lists we find several of the same names occur in each. In each we find the name Mr. J. R. Johnson nominated as Vice-President. A more fitting man for the position could not be found in the Society. Distinguished by great skill and origiative ability as a photographer, by large scientific culture, great intellectual power, and singular justness of character, he is every way qualified for the office. We also find in each of the lists the name of Mr. J. A. Spence proposed as a member of council. Mr. Spence is a gentleman in every way well qualified for the office. He is well and favourably known to most photographers, distinguished by unusual skill and excellence in more than one manufacturing branch of the art, a man of large experience and shrewdness, and unusually winning and urbane in bearing, and one of the best fitted on either list for the position of councilman. For each gentleman we have the highest personal esteem; but they are both connected with, and may be said to represent, the Autotype Company. This is certainly not an objection *per se*. We have always maintained that this Company is doing work which will stand amongst the most honourable monuments which the art can at this day claim. The existence of the Company is a boon and an honour to photography; but is it good policy, is it simply consistent that a party—for a party must be recognized as recent objectors to the council—complaining of *camaraderie* in the existing council, should propose two gentlemen connected with one firm as a means of securing independent action, free not only from *camaraderie*, but from the suspicion of such a thing? Further, the allusion of carbon printing necessarily recalls the name of Mr. Swan. One of the complaints made by some of those who have placed themselves at the head of the opposition movement was that the council had nominated Mr. Swan, who, as a



gentleman residing in the country, could not readily attend council meetings. Mr. Swan resides at Newcastle-on-Tyne, but is a frequent visitor to town. In order to preserve consistency, the objectors reject Mr. Swan for non-residence, and propose Mr. Elwell, of Weston-super-Mare! Mr. Elwell's very excellent work we well know, and we know him by correspondence as a cultivated gentleman, and shall hail his accession to the council, if he be elected, with much satisfaction; but we must admire the discrimination between the degree of non-residence, which affects the question, when a distinction is made between Newcastle-on-Tyne and Weston-super-Mare.

It was not a little curious, also, that as the rules make no provision for electing a president, two of the lists contained a nomination for president. The rule relating to the tenure of office states that one of the vice-presidents, five of the council, and the treasurer shall go out of office annually, subject to re-election. One gentleman, in referring to his nomination, justified himself by quoting the seventh rule, which commences, "All officers shall be annually elected," but he omitted to finish the sentence, which says, "with the exception" of those who do not "go out of office by rotation or otherwise." The President does not go out by rotation or otherwise. The office is for life, or until the holder shall resign. It was held so by Sir Charles Eastlake, it was held so by Chief Baron Pollock, and that gentleman pointed out that it was a life tenure to his successor, Mr. Glaisher. Whether such a system is wise is open to consideration. By its operation a society might be saddled with the permanent burden of an incompetent or disagreeable man. In the case of the Photographic Society it has worked well, because it has been fortunate in its presidents. Its present President has served it admirably, and possesses just the fitting qualifications for presiding. Position, experience, suavity, firmness, decision, and knowledge of the forms of public business. Continuance in office of a good president is, we believe, a great advantage to a society; fixity of office might become a great evil. Mr. Glaisher, we know well, would never maintain his tenure of office on the ground of technical right if it were opposed to the wish of the Society. He would prefer to hold his continuance on the ground of popular suffrage rather than mere legal right. That continuity of office in the case of a suitable man is good cannot be doubted. The South London Society has had one President during the whole of its fifteen years of existence, and no greater calamity could occur than the resignation of Mr. Statham.

The Chairman felt it was a healthy symptom that so much interest was taken in the government of the Society, and, in degree, we believe he was right. Another gentleman remarked to us that in Parliamentary government nothing was more beneficial and healthy than an active opposition, and he, too, in degree, we think was right. Progression by antagonism is something more than a philosophical theory; and we have no doubt that the Society will, after casting some sloughs of clumsy laws, rise invigorated and more firmly established to promote the advancement of photography.

#### MODES OF PRODUCING LARGE PHOTOGRAPHS.

The debate on Mr. Croughton's paper at the South London Society, on the evening of Thursday week, although more restricted in its character than the scope of the paper and the interest of the subject rendered desirable, was not without interest. The object of Mr. Croughton's paper was to enforce the advantages of enlargement over direct large portraiture. The object of the paper read by Mr. Edwards on Thursday night was to affirm the inferiority of the method of enlarging advocated by Mr. Croughton, as compared with that of Mr. Edwards and similar methods. The question of producing large direct pictures was left out in the cold altogether, and, but for some interesting

passing allusion by Mr. Aldridge, would have been left entirely without notice.

The discussion was practically narrowed to the enquiry: Which is the best mode of producing the transparency from which to produce an enlarged negative. Mr. Croughton maintains that the method of producing a transparency on wet collodion in the camera, enlarged (say) to half the extent required in the finished enlargement, touching on this transparency before producing the enlarged negative, is the most easy method of producing fine results, especially where the original negative renders ameliorations necessary. Mr. Edwards, on the other hand, maintains that the transparency should be produced of the same size as the original, by contact printing on an albumen film, or something equally free from structure, and that no attempt at retouching the transparency should ever be made, as, if it have been properly produced, it is impossible to improve it by the pencil, or to touch it at all without injury. Whatever of retouching is necessary should be made, he contends, on the original small negative, retouching on the transparency being injurious, and on the enlarged negative rarely necessary. The strongest argument on Mr. Edwards' side is the importance of a structureless film for the transparency, and the importance of contact printing. The small negative produced by the wet process is, as a rule, more or less irregular in texture, the structure of the collodion and the granular character of the silver precipitated in development and intensifying combining to produce this result. When an enlarged transparency is produced from this negative the irregular structure is, affirms Mr. Edwards, enlarged in the same ratio as the image, and when this exaggerated structure and the structure of the film on which it is produced are again magnified in producing the enlarged negative, the result is, according to Mr. Edwards, inevitably coarse and unpleasant. To avoid all this, Mr. Edwards insists that the irregular structure in the original negative must be translated into homogeneous or textureless film before any enlargement is attempted, and that this is done in contact printing upon an albumen film. To this Mr. Croughton's reply is twofold: he points to examples of his own work where none of the offensive qualities described are present, and he points out the ameliorating power he possesses in the mode he advocates. On the subject of ameliorating the transparency there is scarcely so much discrepancy between the practice of Mr. Croughton and Mr. Edwards as at first sight appears, and as each seemed to believe, as they both really do lay stress on such amelioration. Mr. Croughton effects his with pencil, and make his modifications as extensive as he pleases, whilst Mr. Edwards makes his modification only by printing through a medium to soften definition. If the retouching on the small negative be too crisply rendered, or if granulation, reticulation, or defective texture be too sharply reproduced on the transparency by perfect contact between the negative and dry plate, that contact must be broken, so as to soften the definition by making the lines of texture or retouching merge into each other.

In connection with this subject of contact printing Mr. Edwards advanced a theory which will be not a little startling to many photographers. In pointing out that ordinary printing on albumenized paper did not secure perfect contact between the negative and sensitive surface, he expressed a conviction that the print so produced was absolutely an improvement on the negative by reason of that imperfect contact. The surface of albumenized paper, consisting of a multitude of little prominences with spaces between, literally hills and valleys, and the hills only in contact with the negative, the print generally could never render all the sharpness the negatives possessed; and as it could not exhibit all the sharpness of definition, neither could it reproduce, in all their hard offensiveness, all the freckles, rugosities, and other microscopically rendered defects of texture often found in a sharp, brilliant negative.



That the albumenized print does not render all that is found in the negative has often been pointed out, and almost as often lamented, various devices having been suggested to secure a more perfect contact and more perfect rendering. Notably, it was recommended a few years ago to press the paper after sensitizing and drying, so as to secure a smoother surface. Various substances have been proposed as a substitute for albumen, chiefly with the view of obtaining a more perfect texture and surface. Nevertheless, we are disposed to regard Mr. Edwards' view as in a number of cases correct, and to believe that an absolute advantage is gained by the imperfect contact between sensitive surface and negative, a contact not sufficiently broken to destroy definition and produce fuzziness, not so close as to secure rendering of every minute trace of texture in the negative. It may, of course, be argued that the detail lost may be a loss of beauty, as easily as an escape from defect. That is scarcely probable, as neither the artistic beauty of the picture nor the truth of the likeness depends upon such microscopic renderings, and the strongly pronounced rendering of every freckle and wrinkle must inevitably be offensive. The artist can produce every gradation of light and shade, detail sufficiently minute for all purposes of pictorial truth, with a blunt crayon, and without the aid of a crow-quill pen. We have a strong conviction that for large portraiture the texture of rough drawing paper would often be more effective than a perfectly smooth surface.

To return, however, to modes of enlargement. We think that there are advantages in each of the methods under discussion which were scarcely acknowledged by its opponents. Mr. Edwards believed that Mr. Croughton's method was in every way wrong. He believed that working either on an enlarged transparency or an enlarged negative was an error when the work could be done easier and quicker on the original small negative, and was merry over the notion of a tailor making a rent in a garment many times as big in order to mend it the more perfectly. That, by the way, is neither so odd nor so unusual, as repairing is often effected on that principle. But he further mentioned that the transparency should be so perfect in texture that no hand of man could hope to mend its exquisite gradation. Now, when this magnificent transparency has been obtained, it is tolerably certain that no one will attempt to retouch it. To obtain such a transparency, however, perfection in the negative is necessary, which, it is unnecessary to say, is not always found when enlargement is necessary. Given a good negative skilfully retouched when necessary, and we think there is no doubt that nothing can exceed the plan advocated by Mr. Edwards. The minute traces of structure and granularity in the original negative are not of moment, inasmuch as, being invisible to the eye, they will practically cease to exist when the image is "translated," as Mr. Edwards phrased it, into the absolutely structureless transparency, and the enlarged negative produced therefrom will also be free from structure, and the result very perfect.

But, as Mr. Croughton very pertinently remarked, when good enlargements were required from imperfect negatives very different conditions prevailed. After the retoucher has done his best on the negative there may remain many defects. On the negative he can only add light: he can increase existing lights, he can strengthen weak detail, and soften black shadows, dark lines, and dark freckles; but he cannot add shadow, nor increase the depth of dark portions. If the negative be fogged or badly lighted, he cannot add a single dark touch. The eye-brows, eye-lashes, the pupil of the eye, often want strengthening; draperies, locks of air, often require a few sharp, deep touches; the background may require shade; in short, the whole range of improvements which, in a monochrome print, would consist of strengthening dark portions by touches with Indian ink and gum, most important elements in the force and brilliancy of a print, cannot be effected by touching the negative, and can be effected by working on the trans-

parency. And as the hand of man cannot readily assimilate its touches to the minute gradation in the small picture, the transparency is made larger to accommodate the human eye, human hand, and comparatively rough tools he must use, and so the better enable him to harmonize his work with that of the sun. In effect, Mr. Edwards recommends making the defect larger, that he may the better repair it, when he recommends the use of a larger magnifier in retouching. He makes it larger, at least to the eye, and trusts to the skilled hand being able to assimilate its work with that of the sun. Mr. Croughton prefers to enlarge so as to make the work easy for the hand as well as the eye; and he lays stress on the fact that every touch on the transparency has the same effect to the eye as a touch on the final print, so that, practically, the picture is before him, and his work, unlike that of touching the negative, is direct work, and involves no abstruse calculation as to the possible effect of each touch. We think that photographers will see advantages in both methods. In Mr. Edwards' in the advantages of a structureless transparency, and also in the softened definition of imperfect contact in printing; and in Mr. Croughton's, especially where much amelioration is rendered necessary to meet the defects of an imperfect original negative.

One fact is, however, beyond question. Within the past year or two enlarged photographs have attained a degree of excellence before undreamed of. The Autotype Company's enlargements, both in portraiture and landscape, of enormous dimensions, possess a beauty altogether unparalleled by any previous work of the kind; and it is but fair to credit the method which involves the use of a structureless film for the transparency with at least something of the excellence. The enlarged portraits of less imposing dimensions, it is true, of Mr. Edwards, are singularly perfect, and to the structureless transparency he attributes much. In both cases, however, it is impossible to escape the conclusion that the skill attained by much experience is an important element in the case. This fact is just as fully illustrated in Mr. Croughton's case. He uses wet collodion throughout, and apart from the advantages involved in his mode of touching at two stages, we have seen untouched results he has produced, which were literally perfect. Fortunately for photographers, the experience of all these gentlemen is at their service on commercial terms. The curious point raised in discussion at the meeting regarding the Autotype Company's tissue is set at rest in another column by a frank statement of the facts.

As we have said, the original question of enlargement *versus* direct work dropped out of the discussion. In the brief allusion made to it on Thursday night, Mr. Aldridge suggested a curiously interesting consideration. He stated, and correctly, that a head eight inches from forehead to chin was, in many cases, in female heads probably always, much larger than life, so that the direct heads at the Crawshaw competition were, in truth, enlargements. The recognition of this fact introduces a new element into the comparisons between enlargements and direct work if the large heads exhibited in the Crawshaw competition be regarded as the exemplars of direct work. It is clear that the comparison was not quite fair to the direct method, and that it must be regarded, in this match at least, as having given many points to its opponent.

## Correspondence.

### CARBON TRANSPARENCIES.

DEAR SIR.—It was stated at the last meeting of the South London Photographic Society, that our firm did not supply the same tissue as we ourselves used for the production of transparencies; and as half a truth is calculated to mislead, permit us to make a few remarks on that statement.

When we commenced making enlargements, we employed a certain tissue that answered the purpose extremely well.



That tissue we have always sold—its composition is fixed—and it answers all the purposes for which it is sold, as described in the "Autotype Manual."

Nevertheless, thinking something better might be done, we instituted a careful series of experiments, to obtain in carbon transparencies the characteristics which would yield the highest excellence in the enlarged negative.

For some little time we thought a change in the composition of the tissue led to this end, and at that period declined to sell the tissue so varied; but further research convinced us that such was not the case, while it led on to a discovery that secures the exact qualities we desiderate in a transparency. The nature of this invention we decline to indicate; we reserve it for our own benefit in the way of trade—satisfied if we can supply to our customers the best work in the market.

So long ago as May 2nd, we wrote, in the columns of your contemporary, "We are anxious that carbon printing should be practised as extensively as possible, and are desirous of affording every facility in our power to photographers who may wish to adopt what is undoubtedly the 'process of the future'; but the 'speciality' of enlargements in carbon from carbon transparencies not being a process likely to be carried out efficiently, except upon a considerable scale, hardly comes under the category of carbon printing, and we therefore confine instructions in the practice of it to the licencees under our patents, although we make no restrictions as to the purchase of the materials, which are at the disposal of everybody for the purpose of experiment."

This paragraph is still literally true. We use for our own purpose precisely the same "special transparency" tissue that we sell; but the particular knowledge that we possess in its application to autotype enlargements we do not communicate. If any misconception exists in the mind of any one on the point (as the South London discussion appears to indicate) it can only be because their information is not derived from reliable sources. Verbally, and by letter, we make the case clear to our customers. If they require transparencies for window decoration, or lantern slides, we advise to buy the tissue; but if, on the contrary, they desire fine autotype enlargements, we recommend sending the negatives to Ealing Dean as the shortest route to that end.—Yours very truly,

Jan. 13th, 1874.

SPENCER, SAWYER, BIRD, and Co.

#### THE PHOTOGRAPHIC SOCIETY.

SIR.—The reply in your last to my note calls for a rejoinder, which I am sure your sense of fair play will give place to. I have the most positive assurance that the determining reason for my retirement from the council was the part I had taken in agitating the question of reform; and the circumstances will, I think, satisfy most of your readers that this is extremely probable, to say the least.

My letter in the *British Journal* appeared Nov. 26th. The council meeting that retired me was held on the 9th of December. I have the best of evidence that that letter was very sharply attacked by some members of the council, and that its suggestions, instead of being looked at as for the good of the Society, were opposed by a majority of the council, as I knew they would be.

On looking over the roll of the council attendance, there were several members whose attendance was less than nine, and one member, to my personal knowledge, only attended at one meeting last year, and I am informed that he has not been more attentive this; but as I was absent from London during the spring months, I cannot reply for them. I have only seen him once since I have been on the council; and one member elected at the last annual meeting has never attended. I do not question the propriety of the higher considerations ruling in these cases; I only deny point blank that I was retired because I attended fewer meetings than others who were not retired. As to the personal motives or other, I can positively assert that, so far as the drawing up of the requisitions are concerned, no personal hostility was a motive in anything done or planned. I am free to say that I myself felt, and still feel, that our President, with all due respect for his scientific reputation and amiable personal qualities, is not the fittest and most efficient man for the post which the Society contains, and I know that his administration has at times called out very lively disapprobation from zealous and leading members of the Society; yet I have always liked Mr. Glaisher out of the chair so much that I am exceedingly reluctant to find any fault with his tone in it; and if the rules of the Society had left any alternative by his retirement at the expiration of a definite term (as we now suggest in the proposed amendments), I should never have had any feel-

ing in the matter; and, further than this, I have not, nor have I ever had, any personal feeling as to the government of the Society. Most of the members of the council are my esteemed personal friends; but I must say (and every member of the council will know that I say the truth in this) that a majority of them were opposed to the reforms demanded. If this is denied, the supposed privacy of council meetings will not prevent me from substantiating it by particular and circumstantial proof.

I can only say for myself that my occupation makes it very difficult for me to attend our Society meetings, and that I not only did not desire to remain on the council, but cannot accept the new nomination so kindly offered me as a candidate for council at the ensuing election. I shall have no "heart-burnings," and hope that our course will cause none; but the efficiency and character of the Society is of paramount importance; and if that demands any such burnt offerings, they must be made, cheerfully or not, unless I greatly mistake the temper of the majority of its members, which I regard as decidedly in favour of radical reform.—Yours truly,

W. J. STILLMAN.

[We must repeat that Mr. Stillman is in error in almost every statement in his letter. Let us, however, before going further, credit him personally with perfect *bona fides* and absence of personal motive in his action in this matter. We do not doubt his honest good faith and good nature in every step. But he is absolutely in error in his statements. He compels us, against our wish, to state proceedings belonging to the council chamber. At the meeting at which his name was placed on the retiring list we were present, and he was not. We were present from the beginning to the end, and we never heard the letter to which he refers mentioned. We emphatically affirm that it was not discussed in council. What members of council may have said before or after, we cannot tell. We have heard the writing of the letter since then styled disloyal, as it seemed that a member of council having reforms to propose, should propose them in council, where they could be carried. The list of attendances was read from the chair, and, so far as our memory serves, the lowest attendance recorded was two, Mr. Stillman's having been three times. The chairman's qualifications we cannot discuss here. On the question of the feeling of the council in regard to the reforms proposed by the requisitionists, we must distinctly question the correctness of Mr. Stillman's estimate. We have not heard a single member of council express an adverse feeling to the general aim of the reforms proposed. We may go further, and state that we have not a shadow of a doubt, that had the reforms in question been proposed to the council, they would at once have received favourable attention, and have carried in their broadest spirit, without agitation of any kind.—Ed.]

#### HOT DEVELOPMENT.

SIR.—Whilst, in common with many, we have warmed our iron before using, it has only been this winter we have used it *hot*.

Its advantage is, to give more detail with our usual exposure; or it allows of less exposure—both very desirable this dull weather. Its disadvantage is, it has a slight repellant action, and it is useful to add a little spirit immediately before using.

To use: pour sufficient to cover plate into an old tea-cup (if slightly cracked, or not quite circular, so much the better.) It is desirable the cup should have a handle, and then you can tell which side has been against the fire. In our practice we pour it out just after the plate is placed in the slide, putting that against the camera, and the cup containing developer on the hob, or top bar, and oven on the fire, if a bad one. After posing and exposure, the cup and dark slide are both taken in the dark-room, a little spirit added, and, according to circumstances, used quite hot—boiling, in fact—or add to some cold in the usual glass beaker. The first time you get a sitter come late, or on a dull day, and it is desirable to take him, try it, and you will use it constantly.—Yours truly,

Stourbridge.

HOT DEVELOPER.

#### NOMINATIONS FOR COUNCIL.

DEAR SIR,—Will you please permit me to state that in the list of candidates for seats at the council of the Photographic Society proposed by Col. Stuart Wortley, my name has been used without my knowledge, will, or consent. As a member of the Society I have no doubt he was entitled to do it, and I am sure he meant it in kindness; but as I prevented its insertion in Mr. Stillman's list, and, of course, omitted it in my own, I must respectfully protest against its being in that of the Colonel's. Under present circumstances it would be highly improper for me to be a candidate for any office whatever.—Yours, &c.,

JABEZ HUGHES



## Proceedings of Societies.

### EDINBURGH PHOTOGRAPHIC SOCIETY.

An ordinary meeting of this Society was held in the Hall, 5, St. Andrew Square, on the evening of Wednesday, the 7th inst., the President, R. G. Muir, in the chair.

The minutes of previous meeting were read and approved, and the following gentlemen were admitted ordinary members:—Messrs. John Smith, John Aitchison, John White, A. D. Cairns, James Macdonald Hay, William Hislop, Albert J. Allan, Robert Younger, John L. Coulston, Thomas Carmichael, Thomas Dryburgh, William Raeburn, William Paxton, James Taylor, James Storr, W. Rhind, W. Gilmour, George F. Roger, W. Ingles, Councillor Donald, and Alexander Hunter, M.D., F.R.C.S.E.

A letter was read from Messrs. Poulton and Son, intimating a presentation to the Society's album of a large number of very fine photographs, including a series of beautiful cloud pieces. The pictures were handed round for the inspection of the members, and were very much admired.

The President said it was not often that the members had an opportunity of examining such a large number of prints so uniformly fine in quality. They would make their album an ornament to any society, and he had no doubt the members would agree with him in requesting the Secretary to convey to the Messrs. Poulton their best thanks for their valuable donation.

Dr. Nicol then read a paper on "The Progressive Results of the past Session." (See page 25.)

Mr. Tunny said he rose to propose a cordial vote of thanks to Dr. Nicol for his admirable paper—admirable he must say, with exception of the concluding paragraph, but to it he must take exception. He thought, as a society, they had nothing to do with the opinions of sects as to how the Sabbath was kept, and such statements should find no part in the proceedings of the Society. He did not believe that there was a photographer in the country who had not done some photography on the Sabbath day, and he thought every man should be left to the freedom of his own will in such matters.

Dr. Nicol said that he had no wish to interfere in the slightest degree with the liberty of the subject; every man should be convinced in his own mind as to his duty. He thought that there was considerable difference between the private actions of a private individual, for which that individual was alone responsible, and the public scandal to which he had referred. He had written exactly as he thought; and although he should be sorry to delete the paragraph objected to by Mr. Tunny, he, of course, could do so if it were desired by the meeting.

Mr. Tunny said he did not wish to divide the meeting on the subject, but would be satisfied if his protest were recorded.

Mr. W. Neilson, who had taken the chair, as the President had to leave, said that he considered the paragraph one of the best in the paper, and should on no account like to see it deleted. He heartily seconded Mr. Tunny's vote of thanks to Dr. Nicol for the admirable review of the work of the session, and the vote was carried by acclamation.

Dr. Hunter then handed round a large collection of very fine photographs of Indian landscape and architectural scenery, and gave some most interesting information regarding the subjects, and methods of manipulation. He stated that much attention had been given to dry plates, but that, on the whole, they had not found them suitable for the climate or kind of work; and he mentioned also the curious fact that they had invariably the best results in the higher elevations. Dr. Hunter was cordially thanked for the exceedingly interesting exhibition and the valuable information accompanying it.

Mr. Tunny then re-introduced his observations and experiments on the action of barytic nitrate on the nitrate bath. He said that his attention had been called to Mr. J. T. Taylor's observations on the subject in his paper on the work of the South London Society, and Mr. Henderson's experiments, as reported in the *Journal*, and on trying to repeat those experiments he was surprised to find that, so far as he could see, the barytic salt did not possess the properties there attributed to it. He had placed a little of an old bath in a test-tube, and, by the addition of a few drops of distilled water, thrown down a slight deposit of iodide of silver. The saturated solution of nitrate of barium was then added, but instead of dissolving the deposit, it actually increased it, by still further reducing the strength of the bath solution. He had also put it practically to the test in the following way:—He had an old bath giving an abundant supply of pinholes, and this he divided in two parts; to one he added the solution of baryta, as recommended by Mr. Henderson, and left the other in its normal state. On taking a negative from a plate sensitized in each bath, he found the

untouched gave a better result than the one to which the barytic had been added, as while there was no diminution in the quantity of pinholes, the plate from the barytized bath was covered with a whitish film, similar to what is occasionally produced when the collodion has been made with an unsuitable variety of pyroxyline.

Dr. Nicol said he had, at Mr. Tunny's request, examined the sample of barytic nitrate which had been used in his experiments, and found that it was all right. He, too, had tried to repeat Mr. Henderson's experiments and failed, and from the little examination that he had been able to make, he was quite sure that the barytic salt did not possess the property claimed for it; his experiments certainly showed conclusively enough that it neither prevented the throwing out of the silver iodide, nor dissolved it after it was deposited.

The Chairman said that the idea of adding nitrate of baryta to the bath did not originate with Mr. Henderson; he had seen it done years ago by Mr. Rodger, of St. Andrew's, and although he did not know anything as to its action on the iodide of silver, he thought it had, in some way, a beneficial effect on the bath. A few days ago he had an old bath that had been laid aside for many months, and on trial it was found to give a plate completely covered with pinholes. He then added the baryta solution, and on another trial they were found to have nearly all disappeared, although the negative, especially in the shadows, was covered with a whitish deposit.

Mr. Tunny was thanked for his communication, and the meeting adjourned.

### PHOTOGRAPHIC SOCIETY OF LONDON.

The ordinary general meeting of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, January 13th, Mr. J. GLAISHER, President, in the chair. The minutes of a previous meeting having been read,

Mr. STILLMAN objected to them as inaccurate and incomplete.

The CHAIRMAN declined to recognize any general charge of inaccuracy. He would read the minutes seriatim, and ask if each one, as he read, was true or false; and if any specific inaccuracy were pointed out, would be happy to correct it, as he himself, unfortunately, had not been able to be present at the meeting.

On proceeding to read the minutes seriatim,

Mr. STILLMAN again complained of an omission.

The CHAIRMAN said he should be happy to rectify any omission if any member, of his own knowledge, could supply the details.

Mr. STILLMAN was proceeding to read some details from a journal report, when

The CHAIRMAN declined to receive them; he wished for details from any member's personal knowledge.

Mr. VALENTINE BLANCHARD said that Mr. Stillman was not present at the meeting in question.

Mr. STILLMAN said he believed he had already said that he was not present, but he had been informed of the proceedings, in which Col. Wortley asked for certain information, and did not receive it.

The CHAIRMAN again said he had asked for personal information as to the omission.

Mr. STILLMAN, advancing to the chair, tendered a journal, which, he said, contained the details.

The CHAIRMAN declined to accept or recognize the report of any commercial journal as of authority in the transactions of the Society.

Mr. J. R. SAWYER, as having been present at the meeting in question, could, from personal knowledge, confirm the statement as to an omission. Col. Wortley asked a question as to the attendances of the various members of council, which had not received, as he thought, the attention it deserved, and a reference to such a question having been asked should, he thought, find a record on the minutes.

The SECRETARY explained that as he understood the Chairman to rule the question not in order, he had made no mention of it in the minutes, which were simply a record of the order of the transactions, and not a full report of proceedings.

Mr. SPILLER, as having been in the chair on the occasion in question, wished to explain that as the question of Col. Wortley involved a wide enquiry, the discussion of which would have required the whole of the evening, already devoted to other business, he felt it was out of order at that time. It required more consideration than could be then given to it.

Col. WORTLEY said that he asked for a list of attendances of members of council, as some guide in relation to the coming election. The Secretary had since informed him that at the time he asked the question he had not the facilities at hand for furnishing the information, but had since most courteously furnished him with all that he asked for.

The CHAIRMAN said that he considered Mr. Spiller's decision



that the question was not in order was strictly correct. Had he himself been present, he should frankly have supplied all the information he could upon the subject. He liked to see the members interested in such questions, and should like to see at every annual meeting a voting paper placed in the hands of each member, with the attendances of each member of council set down opposite to his name. But as the annual meeting was the proper occasion for discussing business questions, and their ordinary meetings devoted to reading and discussing papers might be seriously interrupted if business questions were obtruded, Mr. Spiller was quite right.

Mr. STILLMAN thought that in any case the question should have been placed on record in the transactions of the Society.

CAPTAIN ABNEY said that a thing of this kind could not become a transaction until it was completed, and as the question had been ruled out of order it formed no part of the transactions to be recorded in such minutes.

After some further conversation,

The CHAIRMAN asked Mr. Sawyer to briefly state the omission as it occurred to him, with a view to add it as an addendum to the minutes. This being done, the question dropped.

Mr. WALTER BIRD and Mr. WERGE were appointed auditors.

Mr. HUGHES called attention to Rule 7, which provided that at the January meeting any member could send in lists of nominations for councilmen in place of those recommended by the council.

The CHAIRMAN having read the rule, invited nominations.

Mr. HUGHES said that in the list of officers retiring and proposed he saw no mention of a president, either for re-election or election.

The PRESIDENT said that by the rules of the Society the office of President was a permanent one. The Chief Baron, formerly President of the Society, said to him at the time when he was contemplating resignation, and he (Mr. Glaisher) was asked to accept the office: "I hold this office for life, or until such time as I voluntarily resign. You will hold it on similar conditions, and you must consider the matter more carefully than if it were simply a temporary office." By the fifth rule, the election or re-election of all officers was provided for, except the President, in relation to whom no such provision was made. He might, however, tell the meeting that he had repeatedly offered to place his resignation in the hands of the council, and they had declined to receive it. He would now say to the members that he would never place himself in opposition to their wishes, and although he had the power to remain President permanently, he would only retain such a position so long as he retained the suffrages of the Society at large. He felt it necessary, however, to explain that there could be no election for President until he resigned.

Three different lists of officers for election at the annual meeting, in opposition to the list of the council, were then handed to the President, who read them to the meeting.

Mr. HUGHES handed in a list as follows:—President, J. Glaisher, F.R.S.; Vice-president, J. R. Johnson; Treasurer, T. Sebastian Davis; Members of Council, Messrs. Elwell, A. Goslett, F. Howard, J. A. Spencer, W. Woodbury.

Mr. STILLMAN handed in a list as follows:—for President, J. H. Dallmeyer; Vice-President, J. R. Johnson; Treasurer, T. Sebastian Davis; Members of Council, Messrs. Elwell, F. Howard, J. A. Spencer, W. Woodbury, Col. Wortley.

COL. WORTLEY handed in a list as follows:—No alteration in President or Treasurer; Vice-President: Dr. Mann; Members of Council: Dr. Farre, Dr. Diamond, Messrs. Stillman, Hughes, and Swan. Col. Wortley also named those he should like to retire, which were, however, with one exception, the same as those proposed by the council for retiring.

Mr. HUGHES wished to give some reasons for proposing his list.

The PRESIDENT said that as each member was strictly within his right in proposing new names, the statement of reasons was quite unnecessary. For his own part, he should be glad to see an actual ballot, which showed that members took an active interest in the Society.

After some further conversation,

Mr. F. W. HART, presuming that balloting lists would be sent out, asked if any provision would be made for country members to vote without being personally present. If such an arrangement were contemplated, he should oppose it.

The CHAIRMAN said that as the rules were silent on the subject of proxies, it would be a question for future decision.

Mr. HUGHES gave notice of a motion at the annual meeting appointing a committee to revise the laws of the Society.

The following gentlemen were duly elected members of the Society:—Col. Maude, Lieut. Chernside, R.E., W. Noel Hartley, and R. V. Harman.

Dr. MANN then read a paper on Dr. Black's observations on and

photographs of the eruption of Vesuvius in April, 1872. A fine series of photographs were shown in illustration, minute and interesting descriptive details of all the pictures as they hung on the walls being given by Dr. Mann. The photographs were chiefly taken on collodio-bromide plates. Great difficulty was experienced, owing to the prejudicial action of the sulphurous vapours on the sensitive surface.

COL. WORTLEY, at the request of Dr. Mann, described the plan he had adopted when photographing the crater of Vesuvius many years ago. He placed another plate of glass in front of his dry plate, separated at the corners by a piece of microscopic glass, and then ran a varnish of marine glue all round the two edges, so as to seal the sensitive surface hermetically from the air. By this means he succeeded perfectly. He thought that a similar plan for protecting plates during the sea voyage on the occasion of the transit of Venus might be useful.

Mr. STILLMAN said that the photographers in Rome, Macpherson and another, who used the albumen process, felt it necessary to seal up their dark slides with varnished paper in crossing a distance of ten miles subject to similar injurious vapours.

After a vote of thanks,

The SECRETARY read a note from Mr. W. H. Watson on producing sepia-toned prints. It consisted in floating the paper on an ordinary gold and acetate toning bath previous to sensitizing.

Mr. J. A. SPENCER asked if any albumen remain on the paper so floated before exciting, as it appeared to him the solution must remove the albumen. The Secretary had not any example of the results, and could not say.

The proceedings were then terminated.

#### SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The ordinary general meeting of this Society was held in the rooms of the Society of Arts, Mr. WHARTON SIMPSON, Vice-President, in the chair.

The minutes of a previous meeting having been read and confirmed, Mr. A. C. Burgess was elected a member of the Society.

Mr. B. J. EDWARDS showed some exceedingly beautiful enamelled cameo cabinet portraits, details of the production of which are given in our YEAR-BOOK. After some conversation,

Mr. EDWARDS then read a paper on "The Best Way to Make Enlargements" (see p. 25).

Mr. EDWARDS also exhibited some examples of unmounted and untouched enlargements, and the large negatives from which they were produced and which were also chiefly untouched. Both negatives and prints were exquisite examples of photography.

A desultory conversation followed, in the course of which the objection was raised that when all the retouching was done on the small negative, the manipulation was apt to show very much in the large negative.

Mr. EDWARDS thought that much depended on the mode of retouching. He blended and softened the touches often by stumping with a piece of chamois leather. By avoiding close contact in printing the transparency the effect of touching was also softened. A large lens of sufficient diameter to permit both eyes to look through at once was invaluable in aiding the retoucher to do his work easily and delicately. The graphoscope would do very well, but the lenses were rarely quite large enough.

Mr. FOXLEE thought sufficient attention was not paid to the fineness of the deposit in the original negative when intended for enlarging.

Mr. EDWARDS said that was unimportant, as there were various ways of translating the coarse texture of the original negative into a fine and homogeneous texture in the transparency. Printing without perfect contact, for instance, would effect that.

Mr. CROUGHTON and Mr. FOXLEE both remarked that this would also destroy sharpness.

Mr. EDWARDS said that this would be less the case than some might imagine; but that, for enlarging, the best results were obtained without absolute sharpness.

After some general conversation on this subject, the question of lenses suitable for enlarging was considered; Mr. Foxlee remarking that the Autotype Company did not use a portrait lens. Mr. Edwards stated that neither did he.

Mr. FOXLEE thought that it was much better to make the enlargement from a small image than to make a partial enlargement in the transparency, and then to enlarge that again.

Mr. EDWARDS thought that the enlargement was best made from a small plate.

Mr. BROOKS narrated a case in which he had been unable to get a good result until he produced a diminished transparency, using only the centre of the lens, and made his enlargement from that.

Mr. YORK suggested that the fault was possibly in the lens.



Mr. CROUGHTON said, that in answering Mr. Edwards' remarks generally he was somewhat in a difficulty, as they were not on equal terms. He had described a process in the PHOTOGRAPHIC NEWS a long time ago, and had given it to the public, whereas Mr. Edwards' process was a secret, and the public generally had not each method before them. He thought the advantages of his process were evident in many respects. It involved only the use of the wet process, with which all photographers were familiar; whilst Mr. Edwards' involved learning a new process. The wet process was rapid and simple, and despite all the remarks on texture, he had showed an untouched enlarged negative, at the last meeting, untouched in all stages, which should absolutely show no trace of texture of any kind. All negatives were not suitable for that, neither were all suitable for Mr. Edwards' process. He did not confine himself to one process. Where a negative was good, he used the Autotype method, using their tissue, and obtaining good results, with little retouching. Where much amelioration was necessary, he contended that his method of working, both in negative and transparency, gave the largest scope; the advantage of working on the transparency being that the effect of every touch was seen, as it would appear in the print. Mr. Edwards' process did not inevitably produce good results, as a transparency produced by one of his pupils, which Mr. Crough-ton showed, would demonstrate. It was also dangerous to negatives, as a broken negative he showed illustrated.

Mr. EDWARDS had produced many hundreds of transparencies, and had never broken one negative, and had never failed in getting contact. They had occasionally broken the transparency plate, but never the negative.

A conversation followed on the relative amount of time consumed in enlarging by each process, and the simplicity of the albumen process. Speaking of the Autotype process of enlarging.

Mr. EDWARDS said it was to all intents and purposes a secret process. It had never been fully described, and the tissue they used in it was not supplied to the public.

Mr. CROUGHTON and others said they had had the special transparency tissue from the Company.

Mr. EDWARDS said a transparency tissue, but not the transparency tissue they use themselves. Mr. Walter Bird told me himself that no one knew their process, and that the tissue they used was not supplied to the public.

Mr. CROUGHTON believed that they had kept nothing back from him, and that he had used their special tissue daily.

Mr. EDWARDS said it was a tissue for transparency, but not the tissue used by themselves.

A conversation on this subject followed, in which several members joined. Mr. York felt satisfied that the Autotype Company would not mislead the public by a pretence of supplying something they did not supply, and Mr. Griggs was certain that any quantity of the special tissue might be obtained by any photographer.

A further conversation followed, after which

Mr. EDWARDS, answering Mr. Crough-ton, said that in rapidity he thought his process had the advantage, as a number of plates being prepared together and kept ready made the matter very simple, an enlarged negative he showed having been completed, transparency and everything, in thirty-five minutes. As to ease, anything was easy after you had mastered it.

After a further brief conversation the immediate question of enlargements dropped.

Mr. ALDRIDGE called attention to the fact that the 8-inch heads competing for the Crawshaw prize called direct were really enlargements, as life-size rarely was so large. The classic standard for the head was one-tenth of the total height, so that an 8-inch head would imply a man six feet eight inches high. He had intended to send some pictures himself, and borrowed a Dallmeyer 70. As he found heads in nature rarely exceeded seven inches, the difficulty of producing 8-inch heads became great, and compelled him to approach within four feet of the sitter. For such a size he would prefer to enlarge, although within certain sizes he thought qualities were obtained in direct prints which could not be secured in enlargements.

Mr. YORK said he thought Mr. Dallmeyer laid it down as a rule, that in no case should the camera approach the sitter nearer than six feet.

Mr. ALDRIDGE said that the time required was very long. In a bright light one minute and a-half, and in the afternoon not less than five minutes without a stop.

The CHAIRMAN pointed out that Mr. Aldridge had introduced a new element into the mode of estimating the Crawshaw prizes, for if the 8-inch direct heads were really enlargements, it was clear that better results could have been obtained in simple life-size.

After some further conversation the proceedings terminated.

## Talk in the Studio.

PHOTOGRAPHY AND THE TICHBORNE CASE.—A history of the various forms in which photography has been introduced in the Tichborne case would make an amusing document. In the most recent allusion to photographic evidence it is subjected to serious ignominy. The Lord Chief Justice, referring to a photograph of "the grotto," said:—"I never was more astonished in my life when I saw the grotto after that photograph." Mr. Justice Lush added, "I should not have thought a photograph could have disguised the place so." The Lord Chief Justice rejoined, "I think it reflects the highest shame and discredit on the man who concocted that photograph." Dr. Kenealy retorted, "Your lordship is now giving evidence." "I am speaking of what I have seen," said his lordship. "That is what witnesses generally do," Dr. Kenealy replied.

## To Correspondents.

STEREO.—So far as we know, Sir Charles Wheatstone had the instrument he exhibited for a short time in the Society's Exhibition in Conduit Street made for his own pleasure, and we have not heard of any intention of making it for sale. The experience you mention is a lamentable one, and very difficult to explain or account for, except on the principle that the public seem to demand in all public exhibitions something more exciting. To the varied and interesting forms of instructive display which the Polytechnic Institution provides, they find it necessary to add lectures, music, dissolving views, ghosts, decapitations, and other mild excitements. The Crystal Palace, to instruction must add operas, concerts, and pantomimes. Any public exhibition which is chiefly designed to instruct, and not prepared with something amusing or exciting, will generally fail. We shall probably refer to your letter again shortly. SKEVE.—It is quite possible to take a portrait with a rapid rectilinear lens in a good light. We have seen some capital open-air portraits taken with it. We believe that Col. Wortley's large pictures were taken with a single lens.

INDIAN.—A variety of causes may tend to produce a lack of brilliancy in your prints. In the first place, they seem to be slightly over-exposed, and also slightly fogged, either from the over-exposure, from diffused light, from the use of a very new collodion, or from insufficient of a restraining agent in the developer. First try reducing the exposure to ten or twelve seconds; if that fail, see that there is no actinic light in your dark-room, or camera, and no unnecessary reflections of light entering the lens. If you are using a new collodion, mix it with an older if possible; if you have none older, add a grain of pyroxyline, and a few drops of tincture of iodine, to each ounce of your collodion, or reduce the quantity of iron in your developer, increase the quantity of acid, or add thirty or forty grains of sugar-candy to each ounce of developer; or use the gelatino-iron developer, or the morphia developer. See various articles on the subject in our YEAR-BOOK out. D. R.—A thorough washing with hot water should serve. A solution of chloride of lime may also be used. Every shelf, corner, and cranny should be so washed.

LEO.—Fuse the nitrate, carrying the heat sufficiently far to burn off traces of organic matter present, then redissolve; or otherwise convert into metallic silver.

ARCHER CLARKE.—Many thanks for a sight of the documents. It seems to us that the paper is a collodio-chloride paper similar to that prepared by Obernetter of Munich, and the print resembles in tone and character those produced by Mr. Bruce of Dunse, on this paper. After examining the documents again, and making some extracts, we will return them to you, together with the example. Thanks for your portrait.

M. P.—It should be Vol. xvii. The mistake has passed unobserved. W. P. F. M.—So far as we know, Genoser has not patented his process in this country; but a process was patented in this country in 1869 by Mr. Rye, which was nearly allied to Genoser's, and was, indeed, as we have understood, practically the same as Genoser's. Whether the patent has been maintained by the payment of the fee due at the end of three years we do not know. Our impression is that Albert's process is the simplest. 2. There is no duty to be paid for distilling water, but the use of a still is illegal without the permission of the Excise authorities. It is probable that if you distil water you will not be interfered with, but still it is possible, and it is safer, therefore, to apply to the Excise authorities for permission, which will, we believe, be readily granted.

N. D.—All particulars will be given in due time. There will be a special meeting held. There is no need for antagonism or hard feeling in such matters.

W. HIGHWAY.—Many thanks; in our next.

W. J. C. MOENS.—Many thanks. We will give the matter our attention.

THE PHOTOGRAPHIC SOCIETY.—A long letter from Mr. Hudson of Ventnor, advocating specific reforms, is compelled to stand over for lack of space. Several Correspondents in our next.



## The Photographic News, January 23, 1874.

### FRENCH CORRESPONDENCE.

THE event of the last fortnight has been the presentation to the French Photographic Society, by M. Leon Vidal, of some polychromic pictures, which he has been enabled to produce by his improved practical method. Between these last specimens and those submitted with his *Memoire* some time ago there is all that difference which distinguishes a work of art from that of an incomplete result. The modifications made by M. Vidal in his process appear at first sight of little importance; but they have a great influence upon the finished production. My readers may recollect that every one of the clichés helping to form the polychrome is printed upon films of different colours, so that it is made up of yellow, red, and blue images, which are developed, like carbon photographs, upon a provisional support. This last is of vegetable paper immersed in a solution of white shellac (powdered) in alcohol at an ordinary temperature. The image adheres perfectly; no air-bubbles are formed, the transparent paper permitting one to see the air that exists before development between the film and the developing surface. Moreover, as the material has a very close texture, and the coating of shellac fills up the smallest interstice, its impermeability is perfect.

M. Vidal's former mode of operating was as follows:—The image, after development, was passed into an alum solution and washed, and then a thin film of gelatine was applied, and allowed to dry.

To mount the proofs destined to be superposed, and thus to form a finished picture of a polychromic character, M. Vidal recommended the following method of operating:—The monochrome image which is to be placed first upon the permanent mount is taken, and put with this into a bath of pure water which has been properly filtered, both surfaces being withdrawn in juxtaposition; the print is pressed down into position by means of filter-paper, and afterwards the impression is allowed to dry upon the mount in the open air. It is in this method of mounting that the recent modifications made by the author are to be found.

Instead of gelatinising the monochromes, he covers the mount with a thin coating of gelatine, which may be either of carbon tissue, ivory, metal, &c., and then every one of the monochromes which are to be applied. To get them into juxtaposition, he merely places the monochrome to be mounted in the required position, thanks to the transparent nature of the vegetable paper; then he adjusts the glass plate, held in the first place horizontally, upon which the proof is placed for mounting, and the liquid between the support and the image is thus allowed to flow off, and the two surfaces to become dry. The operator must not employ pressure to get the two surfaces cemented together—say, by pressing the image with a sheet of blotting paper—for M. Vidal has found that such an operation is attended with danger, for the vegetable paper stretches unequally, and any mechanical force throws out the images from their proper position. By placing the films one on the other wet, and allowing them to settle down and dry, the sharpest results are attainable.

One may judge of this by the three specimens of polychromic printing which M. Leon Vidal presented to the French Photographic Society, and which have been unanimously admired. They represent the reproduction of a charming painting by Chaplin, and two portraits from life, one of which is printed from a cliché by M. Luckhardt, of which copies in Woodburytype and Lichtdruck are to be found in the treatise on photography which Dr. Von Monckhoven has recently published. The second portrait is mounted upon opal glass, in order that it may be viewed as a transparency.

These specimens are charming, and possess, besides all the exactness of a photograph, the beauties of the finest miniature. The portrait on glass shows us how far the process might be employed in the production of glass stereoscopic slides.

Here, then, is the first step made towards perfecting the process; it is a considerable one, and, moreover, one which will convince the most sceptical, after having seen the results, that polychromic photography exists, and that it is destined to play a part in the future of our art.

The ingenious plan, projected by M. Melchion, to reduce the duration of pose, and of which I gave a description in one of my last letters, has quickly found new partisans. The readers of the *PHOTOGRAPHIC NEWS* will remember that the method consists in exposing the sensitive plate through a ground glass, before it actually receives an image or portrait upon it, and to increase the image in a twelve per cent. silver solution before it is developed. M. Franck de Villechole declared, at the last meeting of the Photographic Society of France, that he should in future operate in no other manner, and M. Liebert said as much. These two operators mentioned some slight modifications which they had made to M. Melchion's process. M. Franck adapts to the lens a cap of ground glass, which is employed instead of the plate used by M. Melchion. Quiret employs opal glass instead of ground glass, and modifies his instrument in the following manner:—

The lens is furnished with a cap, the metal rim of which is covered interiorly with black cloth, so as to fit well over the lens, and be easily taken off. In the centre of this cap is pierced a hole, the diameter of which is about equal to the front lens. This opening is covered with opal glass, the ground surface of which is turned towards the lens. In front of the cap is put a screen of black linen, similar to that carried by the doublet lenses of Ross. Fixed on a hinge to the top of the cap, this screen or shutter may be raised and lowered very rapidly, without in any way taking the cap off the lens.

As soon as the sitter has been posed, the focussing proceeds in the ordinary way. The cap, with opal glass and shutter, is put over the lens, and the plate is then put into the camera instead of the focussing screen, and the shutter or screen is raised for a period of from one to five seconds, according to the intensity of the light and the focal length of the object glass. Afterwards the lens is uncapped in the ordinary way, the plate exposed, and the portrait is finished.

By acting in this way, the ordinary routine is but little changed, and the sitter scarcely notices the operation, while the exposure is reduced by at least one-third. It is advantageous before development to plunge the plate in a sensitizing solution of nitrate of silver after it comes out of the slide, and before it is treated with the developing solution.

ERNEST LACAN.

### PHOTOGRAPHIC ILLUSTRATIONS OF THE ERUPTION OF VESUVIUS OF APRIL, 1872.

*Collected and Prepared by J. M. BLACK, Esq., J.P.:*

*Explanatory Remarks.*

BY DR. MANN.\*

THE photographs which are the subject of this communication were collected by Mr. J. M. Black, who happened, by good fortune, to be at Naples at the time of the eruption. A portion of them were made by himself, by a dry process, on gelatine tissue. But those photographs are supplemented, to some extent, by the work of Neapolitan photographers, in order to render the illustrations as complete as possible. The entire series are now placed before the Photographic Society through the kindness of Surgeon-Major W. J. Black, of Edinburgh, the brother of

\* Read before the Photographic Society of London.

the contributor of the photographs, and an old acquaintance and friend of the author of this notice.

The illustrations consist of twenty-six photographs, and represent the different phases of the eruption, the aspect of the great terminal crater of the mountain after the eruption, and the damage done by, and structural peculiarities of, the lava-stream.

The great eruption of 1872 commenced on Wednesday, the 24th of April. At that time the crater was glowing with fire, lava-streams began to descend the cone in various directions, and a column of smoke rose to a great height above the mountain. This state of matters continued during the next two days, the lava-streams advancing steadily downwards along the base of the mountain, rumbling sounds and explosive detonations being heard from time to time, and the ground trembling for miles around. On Thursday night a fresh crater opened out suddenly near the Observatory, bursting up the ground, and swallowing up a crowd of people who had gone up towards the base of the cone to look at the eruption. On Friday the explosions were very violent, being then heard at Naples, and showers of ashes and pumice fell at Pompeii, Cava, and to the south-east. Several craters were now obvious, emitting flames and smoke, and the eruption was about at its climax of splendour and power. The lava at this period ran down in two streams, one towards the south, dividing towards Torre del Greco and Canaldoli, and the other towards the north, also dividing, and threatening Resina, Giorgio, and Cercola. The inhabitants of Torre del Greco were at this time in full flight. The chief stream of lava in the afternoon passed through the villages of Massa di Somma and Sebastiano, sweeping away buildings and whatever obstacles opposed themselves to its path, and gradually piling up an embankment 30 feet high. Towards sunset the pillar of smoke had spread so as to conceal the mountain, and extended as far as Sorrento, towering up in huge, fleecy, cauliflower-like folds of white vapour, 16,000 feet into the sky. Four open craters were emitting flames and ashes on the lower part of the mountain. The ships in the harbour were trembling with the vibrations of the shocks. At this time it was estimated that two hundred people had been destroyed or seriously injured by the lava.

On Saturday the outburst of fire and smoke declined, and clouds of dust and showers of ashes took their place. The entire mountain, and the country for miles towards the north, were obscured by a pall of dust. The volcanic roar and the sound of subterranean explosions were heard twenty miles away. The villages of Massa di Somma and Sebastiano, on the north of the mountain, were at this time half buried; but the flow of the lava had ceased, and the other villages threatened (namely, Resina, Portici, Pompeii, and Reali) were now felt to be safe. They were all, however, deserted by their inhabitants, as were also Torre del Greco and Bosco on the coast, and Ponticelli, Cremano, and Cercola on the north side of the mountain. As many as thirty thousand fugitives from these villages were at this time encamped at Casoria, one of the suburbs of Naples.

On Sunday the mountain was still hidden by smoke, and showers of ashes still darkened the sky. The ashes were lying two inches deep at Caserta and Salerno, and one inch deep in the streets and on the house-tops of Naples.

On Monday the atmosphere of Naples closely resembled that of London in a thick November fog; the sound of horses' feet and of wheeled carriages was muffled as by a heavy fall of snow, and the ashes were in process of being swept up in heaps. The invisible mountain was roaring awfully, the pillar of smoke above its cone was illuminated at frequent intervals by vivid flashes of lightning, and projectiles were cast above the crater to a height of nearly three-quarters of a mile.

On Tuesday there were still subterranean thunder and shocks of earthquake. Ashes and pumice were still ejected in showers from the cone. Thunderstorms prevailed, and heavy rain began to mingle with the fall of ashes.

On Wednesday, the 1st of May, sand and ashes were still falling in Naples, and its streets were enveloped in darkness; but the volcanic roaring had ceased, and fewer projectiles were seen. The old crater appeared to be nearly silent, but four new explosive furnaces were discharging smoke and flame around its site.

On Thursday the eruption had come to an end, thus giving eight days for the continuance of the outburst.

The chief sources of lava during the eruption were two craters, situated one on the old cone and one in the Atrio del Cavallo, the spot to which horses only are available in making the ascent of the mountain, some little distance from the Observatory, and between it and the base of the cone. The side of the old cone fell in, and it was fissured from top to bottom towards the north. A deluge of lava was discharged from the base of this fissure into the Atrio del Cavallo, and then passed on over the villages Massa di Somma and Sebastiano, covering a vast tract of country 15 and 20 feet deep, and at one time threatening the entire east slopes of the mountain. The Observatory stands on an eminence known as the Cantaroni Hill, which is connected with the base of the cone by a continuous ridge. The Atrio del Cavallo, which was reached by the lava almost immediately after issuing from the fissure of the cone, lies north of this ridge, separated from the bottom of Monte Somma by a broad tract of old lava.

The immediate phenomena of the eruption are illustrated by a series of twenty-one photographs. The first gives a view of the mountain from the Strada Nuova, at Naples, before the eruption, showing the cone, Monte Somma, the Camaldoli Hill, and the position of the coast villages at the base of the mountain. A second photograph represents the appearance of the mountain at one o'clock on the morning of Wednesday, soon after the beginning of the eruption, with the two lava streams diverging from the Atrio del Cavallo, on either side of the Observatory, which is situated high up in the angle between the two. A column of vapour, twelve thousand feet high, is drifting to the south over the mountain. The next view gives the appearance six hours later, with the lava advancing as four streams, the two primary ones having subdivided. The villages of Massa di Somma and Sebastiano, now enveloped in the lava, lie on the extreme left of this picture. A dense volume of black smoke rises from a large fumarole in the consolidating lava just above, with the position of the Observatory a little way to its right. The column of steam and smoke is now spread above the mountain in the form of a vast pine tree, between three and four miles high, and is at this time at its greatest phase of development. Another photograph shows the position of the lava streams an hour later, considerably further advanced towards Ponticelli and Naples, and dust-clouds beginning to fall from the fleecy masses of the smoke-column. In the next photograph of the series the appearance at half-past six in the evening is illustrated, when the folds of the smoke-column were drawing in rapidly from their first splendid dimensions, and when the foginess due to the dust-clouds was greatly increased.

On the following morning (Thursday), at ten, the apex only of the smoke-column was visible above the broad, thick mass of the dust-fog, and the lava streams had reached the limit of their flow, as shown in another view. The appearance of Naples, under the still increasing haze of the dust-cloud, on the Friday morning, the third of the eruption, is represented also in its own photograph.

The next picture of the series shows the great lava waste just above the overwhelmed villages of Massa di Somma and Sebastiano, as looked at from the Fosso Vetrana, with the stream just gliding over an inclination to the left, which slopes from above the Atrio del Cavallo directly down to the destroyed villages. Nine other pictures represent different parts of the overwhelmed villages as they appeared ten days after the beginning of the eruption. In two, the north and south borders of the stream are delineated 30 feet high, and bursting through the lower stories of the burnt



and shattered houses. In another view the lava is seen crossing and closing the vista of a street, like a huge railway embankment thrown thirty feet high across the main line of thoroughfare. In all this part of the series the peculiar weird combination of destructive forces by which the volcano operates is admirably expressed. In one place the lava burns to a blackened cinder, in another it dislocates with a resistless thrust, and in another buries up whatever it encounters under tons of half-plastic adamant, or under piles of loose ashes.

The cindery formation of the crust of the lava, due to imperfect fusion and to irregular cooling of a molten mass, is very intelligibly rendered. In one picture is shown the vast width of the main lava-stream overwhelming the face of the country towards the Bay of Naples, after the fiery flood had swept over Sebastiano.

(To be continued.)

#### NOTE ON SEPIA-TONED SILVER PRINTS.

BY WILLIAM H. WATSON.\*

A LITTLE while ago I was wishful to try if a print could not be made to represent more faithfully a sepia drawing than is the case with ordinary silver prints, and after a few experiments on the subject, which it will be needless to explain here, I succeeded in getting a picture sufficiently like a sepia sketch to satisfy me.

Of the process I have adopted I append a brief description; and I may add that I have found this method of printing much more easily managed than the ordinary one, consisting of sensitizing, exposing, toning, and fixing. In this case the toning is effected prior to the sensitizing.

I use as the basis the "Eagle" albumenized paper; but I have no doubt whatever that other good papers would answer equally well. The *modus operandi* is the following:—

Float the albumenized papers in the first place on a toning bath for from five to ten minutes, the bath consisting of—

Chloride of gold	...	...	...	1 grain
Water	...	...	...	10 ounces
Acetate of soda	...	...	...	20 grains †

Remove from this bath, and, when perfectly dry (otherwise stains would be produced), sensitize by placing it on a silver bath (30 to 35 grains of nitrate to the ounce of water); then dry the paper again and keep it under pressure till required for use.

After printing rather darker than the finished picture is actually required, the print needs simply to be fixed in a hyposulphite-of-soda bath and washed and dried.

If the print is viewed by transmitted light, it has a fine transparent aerial effect; and, as I have said before, the finished picture has a beautiful sepia tone.

The only important drawback to this process is that the paper does not keep well. Whether the discolouration is owing to actinic action being continued in darkness, or to the action of the silver on the organic matter of the paper, I cannot positively say, but rather think it is due to the latter cause.

#### NOTES ON PHOTOGRAPHY IN THE ARCTIC REGIONS.

BY LIEUT. CHERMSIDE, R.E. ‡

WE invariably used an iron developer for wet plates, and it was with these solutions that we had the greatest trouble. They were first much influenced by the impurities contained in the water, as evidenced by their turbid appearance. We also found that if to the acetic acid, alcohol, and crystals of protosulphate of iron, water at the ordinary temperature was added, the crystals, even though previously pounded,

were not appreciably dissolved after the solution had been allowed to stand for a week or ten days. The solutions were therefore made up with water at temperatures from 90° to 120° Fah. and kept in the engine-room; and we found that under these conditions the developer would always act, provided it had been kept for a few days. With freshly made solutions but little result could be obtained, and the deoxidizing action of a ten-grain developer that had been made up for a week was stronger than that of a sixty-grain solution, unless the latter had been made up for at least thirty hours. The solutions were not used until of the dark clear colour of brown sherry, and, once of that colour, seemed to keep indefinitely; whether this was due to persulphate of iron or not, no rustiness or want of transparency ever appeared. Until it had been made up for twenty-four hours the solution was clear and colourless, after which the colour gradually deepened, and it seemed of full power when from four to six days old. When used cold, or at the temperature of the surrounding air, however evenly poured over the plate, a spotted mottled staining was in places always observable, as if the constituents of which the solution was composed were no longer held in intimate mixture. The refusal of the solution, when still colourless, to act at any ordinary temperature was not perceptibly altered by reducing the amount of acetic acid contained in it, which was diminished to a point at which the formation on the film of a dark purple seam showed the necessity of its presence; nor did the addition or withdrawal of alcohol within certain limits produce appreciable effects; so that we concluded that a sluggishness of action was induced by the climate, only to be overcome by mixing the solution and maintaining it at a high temperature.

The proportions used in the solutions were:—

Protosulphate of iron	...	10 to 60 grains
Glacial acetic acid	...	6 to 18 minims
Alcohol	...	10 to 30 "
Water	...	1 ounce

Of course stronger developers were applied to films that had been only exposed for one or two seconds or less, or where, as is often the case in Arctic regions, from the contrast of the objects in the view, their adoption seemed advisable. With instantaneous views under disadvantageous circumstances of light, we found sugar of great use in bringing out the image; it was simply pounded, and a few grains placed in the beaker containing the solution with which the plate was about to be flooded: this substance seemed to stimulate the action of the developer, and also to increase the density of the deposit. Gelatine has, I understand, the same effect; but, unluckily, we had none on board. In intensifying, having no iodide of potassium, no attempt at changing the colour of the deposit was made, but merely that of increasing its density; for that purpose we used the following solution:—

Pyrogallie acid	...	1½ grain
Glacial acetic acid	...	20 minims
Water	...	1 ounce

This solution, like the developer, gained strength by keeping, and acted most powerfully when of the same colour as iodized collodion. I unfortunately imagined that our negatives could be intensified on our return, having no idea what a ticklish operation the removal of the varnish from a film is, and for a long time intensified but few. This process was almost always carried on after fixing, from the difficulty of seeing in the dark room how the work was going on. A few drops of solution of nitrate of silver (30 grains) were of course added. In making up this solution we failed for some time to get a satisfactory result, a flocculent white precipitate of chloride of silver being profusely formed, even with filtered water; water from the engine-room condenser, however, gave a good result after filtration, a flakey brown precipitate of sulphide and iodide of silver that was invariably formed proving harmless and easy of removal.

As might be expected, with fixing solutions we had no

\* Read before the Photographic Society of London.

† Some further explanation is necessary here. Albumenized paper floated on such a bath would lose its albumen. Such a bath would not coagulate, but dissolve the albumen, as Mr. Spencer pointed out at the meeting. The chloride of gold might be used in salting the albumen in the manner employed many years ago by Prof. Maconochie.—Ed.

‡ Concluded from page 29.

difficulty; but washing the film after the removal of the superfluous iodide and bromide was always a very delicate operation. Lukewarm water was very gently poured out from the jug, and, from the presence of light, any indication of the splitting or blistering of the film could be observed, and its occurrence often prevented by the application of heat. At first, indeed, we lost many films in the washings prior to the fixing process; but latterly this was the only critical time, some splitting unaccountably; and we possess instances of negatives where a sudden crack occurs right across the sky in one or two cases, occasioning, luckily, no injury to the view. This contractile tendency of the film might possibly be rendered harmless by using collodion that gives excessively tough films, as that manufactured from papyroxyline. Blistering often occurred in the final washing, but subsided without injury to the negative on the application of even and gradual heat.

Spontaneous drying in the only places where we could store negatives proved an utter failure, even when the films did not absolutely freeze, and negatives were usually dried in the engine room. Great care was required; and it was above all important that the collodion side should be held slightly downwards, as the moisture of the heated atmosphere continually condensing, fell in dirty drops, from which, unluckily, several of our negatives have suffered. The plates themselves also broke in heating, from the cooling action of draughts of air; and with every precaution we lost eight of our best in this way.

The plates had now to be varnished. Owing to our being unprovided with boxes or space for stowing them properly previous to this process, which, on account of foul weather, had often to be delayed for some days, many were damaged before an opportunity of varnishing them occurred. The difficulty of coating a plate with varnish or collodion on board a ship in motion you can easily imagine; both processes, however, had often to be undertaken when, from wind, tide, or the shocks of ice-navigation, there was a considerable amount of motion.

Varnishing usually came off in the engine-room; and the main points to be attended to were these:—To see that in warming the plate the film did not curl up and leave the glass; to see that no drops of condensed vapour fell upon it; and thirdly, after the application of the varnish, to again apply heat at once; without this latter precaution, especially when the general temperature of the room was low, the varnish at once dried with an uneven matt surface; but once mastered, this difficulty never recurred.

The dry plates used were the Liverpool Company's ordinary and rapid; and the chief objection to them was the lengthened exposure necessary, so that not very many opportunities occurred of using them; this, however, need not have been the case had photography been our main object. The films of these plates were as liable to splitting and cracking in washing and drying, as those of the wet plates, and, in cases of blistering, proved harder to deal with successfully. A good many varnished negatives, the films of which are apparently completely fixed, and show no signs of insufficient washing, have undergone a chemical change, which has caused them to fog over completely; even since our return, we have from this cause lost one or two negatives.

I will now, in conclusion, touch briefly on the conditions of temperature, atmosphere, and light that we experienced.

Photography with either wet or dry plates was successfully carried on from June to September, between lat.  $76^{\circ}$  N. and  $80^{\circ} 40'$  N., and at temperatures varying from  $45^{\circ}$  F. to  $25^{\circ}$  F. In cases where, after exposure, the films of wet plates appeared dry or frozen, it was only necessary to redip the plate in the bath for a short time before development.

The state of the atmosphere is, however, undergoing constant and violent changes; for although the rarefaction of the air necessarily diminishes its powers of absorption of heat, both this and its diathermanous power are directly influenced by the degree of moisture present in the atmosphere; and as this depends not on the absolute quantity,

but on the tension of the aqueous vapour contained in the air, the latter determining the distance of the air from its point of saturation, it will be evident that the limits of this variation are considerable. Still the rarefaction and dryness of atmosphere are usually very great; and as on these depend the maxima of both solar and terrestrial radiation, striking alternations and contrasts of heat and cold occur. From these causes the state of the atmosphere is extremely unstable, and there is a great frequency of fog and mist formed over land, sea, and ice; in the former case the high temperature of the moist soil is the cause, and these fogs are at some height above the ground, only clinging to the hills. But the sea-mists, formed from the air heated and moistened by contact with the earth flowing in currents over the cool surfaces of sea or ice, hang very low; they are unfortunately of great frequency, and often last for two or three days.

But of adverse conditions, the most frequent and annoying is one almost invariably present in a greater or less degree, and especially so in the brightest conditions of light, namely, the vibration of the atmosphere caused by the heated vapours that rise from the thawing soil. The currents of air thus formed are of various temperatures, and, by opposing media of different refracting powers to the passage of the rays of light, produce vibrations that effectually blur the image in the negative.

From the unequal densities of the different layers of air in calm and fine weather, when the temperature of the air is above that of the sea, the various effects of refraction are particularly noticeable, and inverted images in the air of various objects, especially of bergs and masses of ice, are excessively common; and as it by no means always occurs that the layers of air in which the phenomena of various degrees of refraction and of total internal reflection take place are horizontal, the images are often inclined at wonderful angles. As these phenomena are generally transitory, patience is often rewarded by a clearly defined view; and, indeed, when the conditions are favourable, the nature of the light of the Arctic summer is such as to fully compensate the photographer for many drawbacks. The light seems very rapid in its action, and highly actinic, the low absorbing power of the air permitting, I presume, the passage of the actinic rays with but small diminution of power.

The amount of exposure given varied in the case of wet plates from half a second to over thirty seconds, and with dry from three-quarters of a minute to several minutes. From various circumstances before alluded to, a very large proportion of our photographs were taken with the shortest possible exposures, as we were seldom able to give over four seconds; for if the camera itself was not placed on the ship or a moving block of ice, still objects in motion were generally included in the view. When able to give what exposure we pleased, eight seconds usually proved sufficient.

The actinic action of the light was undoubtedly reduced when the air was charged with moisture; but under the most unfavourable circumstances in this respect it was still strikingly powerful. The great distances at which objects can be clearly photographed are of course of immense convenience, hills and other features at a distance of ten miles being clearly defined in some of our photographs.

Finally, I may mention that the obliquity of the sun's rays seemed but little to influence the light, photographs having been often successfully taken by the light of the midnight sun.

#### RECOVERY OF SILVER FROM CYANIDE BATHS.

DR. GRAEGER states that there are many methods of accomplishing this object; but none have been so easily carried out or have obtained enough of the silver to be as satisfactory. The process recently described by Ney, in which the silver was precipitated as a chloride by the addition of muriatic acid, had both these faults. The silver was not all precipitated, the subsequent treatment of the precipitate was



not a simple one; and beside, the operation was attended with a strong evolution of prussic acid, which is extremely unpleasant to many persons, not to say dangerous to life.

"By accident," says Dr. Graeger, "I discovered a method of obtaining all the silver in a very simple and easy manner, and one that may be operated by persons who are not chemists. It is based upon an observation made by myself that cyanide of silver is perfectly reduced to metallic silver by grape sugar, provided the solution contains no free alkaline cyanides (cyanide of potassium or of sodium). The cyanide of potassium present is destroyed by adding a suitable quantity of a solution of green vitriol, which converts it into ferro-cyanide of potassium. Then grape sugar will reduce the silver in the alkaline solution. In carrying out this method, the silver bath, which has become useless, is allowed to settle, and is then decanted into a large iron kettle, where it is warmed, and protosulphate of iron slowly added until a slight precipitate (oxide of iron) is formed, which does not disappear on stirring. It is next heated to boiling, and made strongly alkaline by adding caustic soda or potash, if necessary; and a solution of grape sugar is then added gradually until the liquid acquires a brownish yellow colour. The heat is now to be removed, and the precipitate allowed to settle, after which the clear solution is removed by means of a syphon, and the sediment, consisting of metallic silver and oxide of iron, is thrown on a filter, washed, dried, and ignited. This residue is then treated with nitric acid, which dissolves all the silver, and but little of the oxide of iron. The very last trace of silver in the bath is thus separated and dissolved in nitric acid. To test this process, the following experiment was made: 0.85 gramme nitrate of silver was dissolved in 8 cubic inches of distilled water and chloride of sodium, sulphate of copper, sulphate of zinc, caustic soda and carbonate of soda added, together with enough cyanide of potassium to produce a perfectly clear solution. One-third part of this solution was treated with a suitable quantity of sulphate of iron, heated to boiling, and the glucose added. The precipitate obtained, when treated as above and tested volumetrically with chloride of sodium solution, showed 0.238 grammes of nitrate of silver; this takes three times = 0.714 grammes instead of 0.85 gramme taken, or 84 per cent. A second experiment gave 94.5 per cent. These results are very favourable, especially when we consider that we were dealing with a solution containing only 4 parts of silver in 10,000 of water. It is a striking phenomenon that not a trace of the copper, which was purposely added to test this point, was reduced by the grape sugar."—*Polytechnisches Notizblatt*.

#### COLLODIO-BROMIDE EMULSION.

M. BUYRON, of Lyons, communicates to the French Photographic Society the method he adopts for preparing collodio-bromide emulsion. As he lacks time and opportunity to carry on further experiment, he trusts others will proceed with the matter where he has given it up. His idea is to imitate in the preparation of the emulsion what takes place with a collodionised plate which is not introduced into the dipping bath until after the film has set; to do this, he prepares the emulsion with collodion in the form of jelly.

He begins by preparing a collodion with bromide of cadmium, according to the following formula:—

Alcohol	...	...	35 cubic centimetres
Ether...	...	...	35 " "
Pyroxilin	...	...	1 gramme
Bromide of cadmium	...	...	3.50 grammes.

The quantity of alcohol and ether may be varied, as it is only requisite that the bromide of cadmium should be maintained in solution.

After standing for a week, he decants the liquid portion into a wide-mouthed stoppered bottle, and proceeds to evaporate the solvent by shaking the collodion in such a way that it adheres and hangs to the sides of the bottle. In this way a uniform evaporation of the whole mass is brought about, and the formation of a hard skin over the

material, such as would materially interfere with the evaporation, is prevented. When the jelly contains no more liquid than is necessary to divide it, and it has become firm, and allows no more solvent to flow from it, it may be said to be sufficiently evaporated.

In another vessel are dissolved three-and-a-half grammes of nitrate of silver in thirty cubic centimetres of alcohol, which is easily done by simple agitation; this solution is filtered, and then placed in a bottle sufficiently large to contain the whole of the collodion jelly just prepared.

With a bone or ivory paper-knife, the jelly is broken up into small fragments, and thrown into the bottle containing the argentiferous solution, and the reaction is allowed to proceed for two or three days. At the end of this period the transformation of bromide of cadmium into bromide of silver has taken place throughout the whole mass. The jelly is further broken up, and the alcohol replaced by another thirty cubic centimetres, in a few days. Any alcohol remaining is decanted off, and may be employed for any suitable purpose.

It is from this jelly that the collodion is prepared, by mixing it with—

Alcohol	...	...	40 cub. centimetres
Ether	...	...	60 " "
Pyroxilin	...	...	0.20 gramme,

and agitating the whole until a perfect liquid solution has been formed.

Afterwards, the collodion thus sensitised is allowed to remain for five or six hours (of course, in a spot sheltered from daylight), and nine-tenths of it decanted into a second bottle or collodion pourer; it is then ready for use.

If it is desired to add an organic substance of any kind, or an excess of bromide of cadmium, or of nitrate of silver, this should be put into the second collodion before the bromised jelly is mixed with it.

A single washing of the film, after the plates have been prepared, suffices to remove all injurious matter; the collodion is applied, washed, and treated in exactly the same way as any other collodio-bromide emulsion.

#### ON THE WANT OF SENSITIVE CHEMICALS AND PERMANENT PRINTS.

BY W. T. WILKINSON.

PHOTOGRAPHERS are always lamenting the want of an instantaneous process in the studio, but are very backward in trying any method which the author claims to be a solution to the problem. How many who are hankering after a quick process for portraiture have tried the bromide of silver with the bath, as described by Mr. Sutton, or the emulsion process (wet) of Col. Stuart Wortley, or the supplementary exposure of the sensitive plate to coloured paper or to light admitted through coloured glass, or the plan of removing the diaphragm during the progress of exposure? If any of these or kindred plans were faithfully experimented with and reported upon, the profession would very quickly be able to catch the fleeting expression of the sitter.

Now, with regard to the stability of prints, Mr. Hart, a chemist, who is well known to be a practical photographer as well, has introduced a chemical preparation for the purpose of eliminating the hypo from our prints. Mr. Newton, in America, has recommended the use of nitrate of lead for the same purpose. Still photographers go on in the old way, lamenting over the faded beauty—still loth to go in for permanency.

This very apathy is a direct encouragement for secret processes, as the experience of the last year has shown that photographers will readily buy a secret process when they will not try one which is published free. My object in this article is to urge photographers, when any process is published which seems at all likely to be what it is claimed to be by the author, to try it faithfully, and report upon it through the News. If this is done, the prophecy of Mr. Jabez Hughes will be fulfilled long before he at present dreams of.



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## STAINING COLLODION FILMS.

THE idea of staining collodion films is not strictly a new one, having been repeatedly proposed by experimentalists for different purposes. It was proposed in America some ten or a dozen years ago to tint collodion with saffron or turmeric for the purpose of securing greater intensity in the negative. Whether the idea was ever put into practice beyond the first tentative trials of the originator of the idea we are uncertain; but it is tolerably evident that it never came into general use. Some years later it was suggested that saturating the film of a very hard negative with a tint of aniline blue would probably secure greater softness in the print, as the dense deposit, being dyed blue, would more readily transmit light. The use of a yellow varnish has unquestionably been found useful in giving additional printing vigour to weak negatives. At the first glance it scarcely seems reasonable to suppose that the application of a non-actinic varnish all over the negative should give it any additional intensity, inasmuch as the yellow tint of the uniform film of varnish would naturally retard the passage of light equally all over the negative, lights and shadows alike; but, apart from the fact that the slow printing induced in itself conduces to vigour, there is really an actual increase of intensity or contrast to be gained by using a varnish which will communicate a yellow dye to the film. A glance at the actual conditions will show how this happens. All spirit varnishes really permeate, rather than merely cover, the collodion film, leaving a layer of resin not simply on the surface, but permeating or suffusing the texture of the collodion, and the dense portions of the image, being so much thicker than the shadows, act in some degree like bibulous paper. They retain a greater proportion of the resin and of the colouring matter than the shadows. The result is, that the depth of the yellow tint in the lights, where a greater body of it has been absorbed, is considerably greater than that of the shadows, and so an actual increase of contrast is secured.

But there appears to be a probability of a still greater and more important purpose for the practice of tinting or staining the collodion film by Mr. Henry Cooper, as described in the YEAR-BOOK OF PHOTOGRAPHY just issued. As our readers know, Mr. Cooper proposed this plan as a means of superseding the necessity for backing dry plates with a non-actinic pigment. All dry plate photographers are, to their cost, familiar with the fact that those dry plates which have an exceedingly transparent film are subject to the defect styled "blurring," for want of a better term. The defect is the result of the light passing through the transparent film being reflected back, so as to form a blurred image. The application of a yellow pigment at

the back of the plate was found to check this defect, but it was a troublesome remedy. Tinting the film with a non-actinic colour has been found to check the action even more effectually, and without anything like the inconveniences involved by the use of the pigment.

As the result of further experiment, Mr. Cooper finds that the method of dyeing the film which he has introduced may be applied with advantage in many cases to the wet process. All photographers who have had experience in photographing interiors are familiar with the blurred spreading of the light which occurs when a strongly lighted window is opposite the lens, and a similar defect is not infrequently seen where a mass of dark foliage cuts sharply against a mass of bright sky. The addition of an aniline dye to the collodion obviates these difficulties. The mode of securing immunity from the troubles in question is very simple. Mr. Cooper makes a ten-grain solution of rosaniline in absolute alcohol, and of this adds about five minims to each ounce of collodion. The nitrate bath will, especially if excess of the dye be employed, be coloured; but its working qualities are not in any degree impaired by the colouration. The greater portion of the colouring matter will be removed from the negative in the processes of fixing and washing, and may be thoroughly removed by a final rinsing with methylated spirit; but Mr. Cooper has found no printing disadvantages in leaving the tint in the negative.

If the important discovery of Dr. Vogel, as to the value of charging a sensitive film with a colour which absorbs a non-actinic ray, be found applicable in general practice, another still more important use will be found for dyed films in photography, which may have a very important influence on the photography of the future.

## NEW AND EFFECTIVE MODE OF COLOURING PHOTOGRAPHS.

MANY methods of rendering photographs transparent, and colouring them at the back, have been proposed, and some have been patented. Although many of them have produced very effective results, none of them have ever acquired a permanent position in the practice of portraitists. Such methods have, undoubtedly, some special conveniences. Besides being simple, easy, and cheap methods of securing coloured pictures, which please many of the public, there is the signal advantage of perfect retention of the likeness: the finished picture is a photograph suffused with the hues of nature, rather than a photograph covered with colour, and depending on the skill of the artist in applying that colour for the retention of likeness. One serious drawback which has, however, attended most of the methods of making the photograph transparent arises out of the fact that almost all the materials used (varnishes, resins, turpentine, and wax) have a tendency to turn yellow, giving the picture, in a few years, a dull, jaundiced hue. A correspondent, signing "Alpha," sends us brief details of a method of producing a similar effect without the drawback to which we have referred. Instead of resinous substances, he uses gum and glycerine. The enamelled surface produced by the collodion will have a valuable preservative effect. The pictures so produced will not be high art, but they may be pleasing and effective, and meet the purpose of a large section of the public. In such case they must also meet the purpose of many photographic portraitists. Our correspondent says:—

"1. Take a sheet of glass and collodionize it, using a substratum of wax in ether, or its equivalent, to secure final lifting. Let it dry. Take the picture you wish to colour, and on a touching-up easel paint it, many shades too strong to be natural, on the back with water colours, for choice, as they dry quicker than oil; or Judson's dyes will do as well. Bear in mind, the colour must be outrageously strong, or rendering it transparent will make it poor and flat when finished. Let it dry. Take the pho-



tograph so coloured, lay it in a clean dish, and pour over it methylated spirit sufficient to cover it: very little will be required. Let it remain in the alcohol five minutes or more.

"Mix, beforehand, a solution of gum in water, as thick as castor oil. Put it in a dish, and add sufficient glycerine to keep it from cracking when dry—eight or ten drops to one ounce of gum solution.

"2. Now take the photograph, wet with the spirit, without draining, and plunge it into the gum solution. It will turn white at first, but that will be removed subsequently. When dry, and covered both sides with gum, take it, place it face down, colour up, on the glass No. 1; press out the bubbles, and let it dry. Cut round the edges, and mount on cut-out oval card matt, with a white card behind that.

"ALPHA.

"P.S.—This process originated in America, and is not new, though not generally known. The pictures are superior in appearance to water colour drawings. It may be called a modification of the ivorytype, without the two nuisances, gum resins and the glass."

## TWO NEW PRESERVATIVES FOR DRY PLATES.

BY M. DE SAINT FLORENT.\*

SINCE the year 1869 I have employed two kinds of preservatives, which have not, I think, been mentioned elsewhere, as suitable preservatives for dry plates. They are two compounds well known to druggists, and called *ratanhia* and *laudanum* of Sydenham (wine of opium).

*Ratanhia*, which is met with in commerce in the form of an extract, is produced from the root of a plant of the family of polygalæes which grows in the West Indies and Peru, and which is termed the *krameria triandra*. The extract, whether obtained with water or alcohol, is very much used in medicine, because of its astringent properties, which it owes especially to the tannin it contains. This substance, employed in the proportion of ten parts of aqueous extract to one hundred parts of water and ten to twenty parts of alcohol, forms an excellent preservative for dry plate films. It appears to impart sharpness, and perhaps a little hardness to the image, and so as to prevent any excess on this score it is well to employ a strongly bromised collodion.

The laudanum of Sydenham, or opium wine, used in the same proportions, gives still better results. Pictures obtained by means of this substance are very harmonious, and present most remarkable gradations of tone.

I have experimented with a view of determining whether the excellent preservative properties of the laudanum are in any way due to one of its constituents. The extract of opium, diluted to a suitable degree, allows me to preserve prepared plates for a certain time, but for a much more limited period than the laudanum, and the clichés produced are, moreover, in every way inferior. The saffron and other matter which also enter into the composition of laudanum of Sydenham have no especial properties of the required nature, and it is only the compound itself that furnishes such excellent results.

The material, as specified in the Pharmacopœia, and prepared by druggists, is what I employ with such good effect. It is probable that the preservative properties of this substance are in the main due to a certain quantity of morphine that enters into its composition. This material, in the form of acetate, has already been cited as a good preservative, but is rejected by many on account of the dangers inherent to its manipulations.

Dry collodion plates treated either with *ratanhia* or laudanum of Sydenham in the proportions I have cited will be capable of keeping the film in a perfectly sensitive condition for a period of many months. The plates yield most excellent results with an alkaline developer, especially if the collodion is prepared on the collodio-bromide method, such as that proposed a little while back by M. Chardon.

\* Read before the French Photographic Society.

## Critical Notices.

VITRIFIED PHOTOGRAPHS ON ENAMEL. The Powder and Film Processes. By J. SOLOMON. (London: J. SOLOMON, Red Lion Square.)

THE issue of a manual of enamel photography will be regarded as a boon by many portraitists. In the concise little work before us Mr. Solomon gives details of two distinct methods, both involving secrets, which, we are informed, he purchased at a considerable outlay; and experience, which he has gained by some years of experimental practice. The two methods are described as the powder process and the film process. The first is analogous to that patented many years ago by Mr. Joubert, in which a photographic image is produced upon an adhesive surface, a vitreous colour in powder being made to adhere to the image in different proportions as determined by the action of light; and the second, or "film" process, is that in which a silver image on collodion is converted by toning into an image of platinum, gold, iridium, or some other metal or metallic oxide, the image in either case being finally vitrified by the aid of a suitable flux and a muffle furnace. The information is clear, simple, and complete. No photographer can hope to succeed in the beautiful art of producing enamel photography without the skill gained only by practice; but the formulae and details of manipulation here given will constitute an excellent guide in acquiring the experience which alone leads to success.

## ANIMALS IN THE ZOOLOGICAL GARDENS:

Photographs from Life by F. YORK.

PERHAPS in no branch of photography has the progress been more marked and satisfactory of late years, than in that consisting of animal portraiture. We confess to something like a child's delight in poring over the wonderful series which Mr. York has, with rare patience and consummate skill, obtained in the Regent's Park Gardens. The "wild beast show" of early days is one of the first agencies which stimulates the youthful imagination, and lifts it above the common-places of every-day life; and in going through the examples before us, we are carried in imagination to the uttermost parts of the earth: the arid wastes of African deserts, the jungle of India, the Australian bush, and Arctic snows; and their denizens, successively come before us. Perhaps the leading feature of the animal portraiture before us is this naturalness of aspect, which permits us to think of the wild beast, and not of its cage. But a few years ago it was regarded as a great feat to secure such photographs at all, and we were content to examine with curious scrutiny a tiger, say, taken in full sunlight, where it was difficult to disentangle the bars of the cage, the shadows which they cast, and the stripes of the animal from each other, a design being at times produced as complicated as, if less regular than, a Highland tartan. Here we have no such effects: in many cases no trace of cage or confinement is presented, and the animals might, for all the picture indicates to the contrary, have been taken on their "native heath." In very few cases, except in portraits of the stronger and more ferocious carnivora, are the prison bars intruded at all. The selection of position, aspect, and general bearing are in a high degree satisfactory, and singularly characteristic in effect, and are suggestive of two important qualities in the artist, quite as important here as his skill in photography. Every picture suggests the appreciative spirit in which each position and attitude has been chosen, and the patience which has waited to secure such effects. Nothing, perhaps, more perfectly illustrates, than such a series, how different and much higher are the qualities required in a photographer who aims to embody art qualities in his work than those involved in the mere capacity to work a process, and place a camera at random before any object to be depicted. Very curious are the expressions of the different animals as they are caught, as

they pause whilst their attention is suddenly gained. The antelope, with steps just arrested, ears pricked forward, raised head, and starting eye, seems alike surprised and startled. The Brahmin cow, and others of the same family, look round with lazy indifference. The wolf comes to the entrance of his den with aspect half furtive, half defiant. The seal, with gentle docility, goes through a performance at the instigation of his keeper. The smoking monkey indulges in his pipe. The chimpanzee, seated on a tree to which he clings very humanly with his hands, looks very like a costermonger claiming, truculently enough, his rights of poor relationship. There is a singularly quaint humour in the appearance of the Typhon heron with his long beard, perched solitary, on a rock, like an eccentric seer proclaiming desolation to some erring people. Lions, lionesses, and tigers are here in grand variety, with superb aspect of lofty contempt, even in their captivity.

Leaving the question of characteristic portraiture, upon which we might dwell at much greater length, some especial words are due on the technical qualities of the photography. Avoiding, in the majority of cases, the distracting effect produced by the intense light and shadow of direct sunlight, we have here in many places the perfection of photography: fine lighting, perfect modelling, full detail, great brilliancy, and satisfactory light and shade. Upwards of twenty years ago the Comte de Montizon, in the very earliest days of the collodion process, secured a few instantaneous photographs of some of these animals. They were admirable works for the time, and were greatly admired; but what an amazing contrast between the results of then and now! It was to these early attempts Mr. Glaisher referred when, in delivering the medals, he spoke of the great superiority of the animal portraiture of Mr. Hedge, and when an unfortunate misconception of the intention of the allusion gave cause of annoyance to so excellent a photographer as Mr. York. A large number of the series before us are new, having been produced during the last year, whilst others were taken afresh. Fine as were the former pictures, we fancy we can find minute points of technical superiority in the most recent examples, showing how, in work of this kind, practice leads to perfection.

Mr. York has also increased his series of London stereographs, especially adding a very complete set of views of the Tower. Our space does not permit us to notice them in detail.

**THE AUTOTYPE PROCESS**, being a Practical Manual of Instruction in the Art of Printing in Carbon and other Permanent Pigment. Third Edition, Revised and Enlarged.—(London: SPENCER, SAWYER, BIRD, & Co.)

This is a new edition of the Autotype Manual, considerably amplified. It contains a fine portrait admirably illustrating the excellence to be secured in carbon printing, and a capital photo-collagraph illustrating a chapter by Mr. Sawyer in the mechanical process employed at the Autotype Printing Works. We need scarcely say that every one interested in carbon printing—and every photographer should be—ought to possess the work.

**PHOTOGRAPHY IN FOUR LESSONS: A Book for Beginners and Advanced Students.** (London: J. SOLOMON, Red Lion Square.)

This is one of the most compact manuals of instruction we have seen. The four lessons are devoted to the production of collodion positives, the production of negatives, printing on paper, and the production of enlargements. The few introductory words describe the aim and character of the work very clearly. Here they are—

“This is chiefly a book for beginners. It does not deal with the history of photography, nor its theoretical principles, nor its manufacturing chemistry. The beginner will purchase his apparatus and materials ready made; mix his preparations as we shall

direct, and use them as we shall instruct him, his sole object at present being to take pictures. When he has accomplished this, he will begin to inquire upon what principles the art is based, and make some practical experiments in its chemistry. But he will begin by learning the practice. A man learns to talk before he studies grammar.”

The lesson on enlargements is unusually complete and valuable, and contains, amongst other valuable hints, a chapter on producing transparencies for enlargement by means of an albumen process, which is worthy of especial attention.

**PHOTOGRAPHY MADE EASY: A Manual for Beginners.** By W. F. STANLEY. Second Edition. (London: W. F. STANLEY, London Bridge.)

WE noticed some months ago the first edition of this useful instruction book, and we have pleasure in again commending it to our readers in a second edition.

**LETTS' DIARIES for 1874.** (London: LETTS, SON, & Co., Limited.)

THE recent demands on our space have delayed some pressing notices. It is getting late in the year to call attention to this very complete and admirably convenient series of diaries, almanacs, and pocket books, is as perfect as ever, and, as it has been for so many years past, is issued in almost every form which the convenience of the public can demand.

## Correspondence.

**DISAFFECTION IN THE LONDON PHOTOGRAPHIC SOCIETY.**

DEAR SIR,—I thank Mr. Hooper for his complimentary reference to me in his letter of last week on the above subject. I have read most, if not all, of the letters which have appeared in your issues, and these prove that “disaffection” exists; whether it is “deep-seated” or not it would be presumptions for me, a countryman, to say. Perhaps, however, you will kindly give me space in which to state my view of matters, and to make a suggestion or two, which may or may not be considered appropriate.

Mr. Hooper has well pointed out that, owing to a most admirable suggestion of his, an alteration was made in Law 9, and no less than twenty-two members joined the Society in December, 1872. I do not know whether Mr. Hooper was then a member of the council; I infer from his letter that he was not, and if not, it will be at once seen that a very valuable suggestion, immediately resulting in the addition of twenty-two new members, emanated outside the council. Let it be understood that I do not say this by way of disparagement in the least, but only to show that the infusion of new blood into any organization awakens, refreshes, and invigorates.

I believe that institutions of almost every sort, if left to themselves, are much too apt to get into a sort of conservatism and routine, from which it is unusual for them to arouse themselves; and if any outside influence attempts to shake up this torpor, it is looked upon as an unwarrantable interference with (almost) vested right—is considered as an intrusion or meddling without due reason, and is resented as such. I am only here stating what I consider the inevitable tendency of systems that are reared on too narrow a basis, without attributing blame to individuals.

Now, sir, to reduce theorising to practice, do the above remarks apply to the London Photographic Society? I believe they do; and with your permission I will point out one or two things which, in my opinion, are susceptible of improvement; at the same time let me say that I do it with great diffidence, because I am so young a member of the Society, and because, living so far from London, I am necessarily absent from its meetings, and but slightly acquainted with its *modus operandi*.

In the first place, then, I would alter Law 7—“Election of Officers.” It says:—“The council, at the ordinary meeting in December in each year, shall declare the names of the members of council whom they recommend to retire, and lay before the Society the names of those whom they have selected to supply their places. They shall also declare the names of the other officers they recommend for re-election, and cause a list to be suspended in the meet-



ing-room. In the event of any member of the Society being desirous of proposing other names than those recommended by the council, a written list, &c., &c., shall be publicly suspended with the list recommended by the council." &c., &c.

In the above clause lies, I think, the root from which the present dissatisfaction has grown; and Mr. Hughes has very aptly put it in his letter of the 19th ult., where, in speaking of this mode of election to the council, he says that the members can provide "opposition lists." I would suggest that the council do not recommend any to retire from the council, do not prepare a list for election, and do not recommend other officers for re-election; all this should be done by the members. Only one list should be prepared, and that in the way of the members sending in the names of their candidates to the secretary before a fixed date, who shall make one list without distinction of name of nominator. This plan would, in the matter of elections, place every member on a level, and the council would have the same right to nominate and vote as their fellow members, but no more. I have been a member of a literary society for fourteen years where this plan is adopted, and it has always worked well.

I further think that the retiring members of the council should go out in regular rotation, and the best men are sure to be re-elected. It may be a question whether the secretary should be elected by the members at large, or by the council alone. I do not know how many meetings the council hold every year, but if he is more intimately connected with the council than with the members, perhaps it would be wise for the council to elect him, as, of course, they should work in union; but that may be a matter for discussion.

One more point I should like a word upon, if I am not trespassing, viz., the mode of election. Why should we country members be debarred from voting? The answer, perhaps, would be that it would neutralize the ballot; but, sir, I think both ends could be secured by the secretary sending to each country member a printed list of the candidates, with instructions to scratch off the names not voted for, and return, under cover, the voted list. These could be marked on the outside of the envelope, "Voting Paper," and only opened at the electing meeting by the presiding officer, who would put them unopened into the voting urn; and, mixed up with the others already there, who could tell whether I voted for Mr. A. or Mr. B.?

I hope, sir, that, because I have made the above suggestions, you will not conclude that I have retreated to that "veritable cave of Adullam" to which you refer in your issue of the 2nd inst. I have pleasure in repeating my words of more than a year ago, that "we ought to strengthen the hands of the council, who take no pecuniary remuneration for their arduous labours, but who certainly, at the very least, ought to receive the grateful commendation of those for whom they labour." I believe "they have the good of the profession (and not their own ends) at heart."

To secure to the utmost these ends, let the Society be placed on the broadest possible basis consistent with efficiency, and I believe the hands of the council will be strengthened, and the "advancement of the art we so much love" will be greatly promoted.—I am, dear sir, yours truly,

F. HUDSON.

Ventnor, Isle of Wight, January 12th.

[There would be unquestionable advantages in some of our correspondent's suggestions, and we should especially support that in the last paragraph of his letter, providing the right to vote of country members. He is in error, however, in some points. In regard to the council, for instance, we never knew a less conservative body, nor one more ready to adopt new suggestions for the advantage of the Society. Such suggestions as those made by our correspondent, if sent to the council, would at any time have met with consideration. In proposing rotation as the sole rule of retirement we think our correspondent is in error, as by following it the Society would at times lose efficient and earnest officers, and retain many who perhaps never attend a single meeting of council. Regularity of attendance at council meetings, as well as seniority and rotation, should govern retirement, and as the existing council alone can know various points of this kind, it becomes its duty, and is the rule in all scientific societies, to recommend officers for retirement. Facilities of the widest kind, and free from all taint of invidiousness, should exist for members electing new councilmen, and there may generally, with advantage, be an infusion of new blood every year. As it is probable that the whole question will come before the Society, members will have an opportunity of making the laws on as wide a basis as they choose.—Ed.]

#### ELECTIONS AT THE PHOTOGRAPHIC SOCIETY.

SIR,—I beg that you will give publicity to the fact that although my name has been published as a candidate for the office of President of the Photographic Society, it appeared without my having been consulted, and without my permission having been obtained; and, further, I distinctly decline the proposed honour, desiring that my name may be expunged from the list.

I have written to this effect to Mr. Stillman, the proposer of the list in question, as also to the President and to the Secretary of the Photographic Society.—I am, sir, your obedient servant,

J. H. DALLMEYER.

19, Bloomsbury Street, W.C., Jan. 17th.

#### THE PROPOSED NEW MEMBERS OF COUNCIL.

SIR,—Seeing in your last issue that my name has in two instances been proposed as a member of the Council of the Photographic Society, I beg to say that, although I feel the honour thus conferred on me, I regret that circumstances would not allow me to fill the position in such a manner as I think it ought to be done.

WALTER B. WOODBURY.

Greenhithe, January 20th, 1874.

#### THE PHOTOGRAPHIC SOCIETY.

SIR,—In the editorial remarks on the meeting of the Photographic Society, you object to a gentleman who was not at the preceding meeting making any remarks about the inaccuracy of the reports of that meeting in the Society's Journal. It has always been represented that the Journal was printed for the benefit of those members who could not attend the meetings; but if we, who are prevented from attending the meetings, are not to know if they are incorrectly reported or not, what confidence can we have in the record for which the Society has to pay?

I objected to the minutes being confirmed until I was informed whether the grave discrepancy between its report and that of a merely "commercial paper" was owing to inaccuracy in our journal, and I distinctly stated that I wished to be so informed. The President, with his usual overbearing and despotic manner when anyone advances ideas opposed to his own, took up the matter *ex parte*, as he generally does, and demanded of me to produce evidence in a matter with regard to which I wanted information, and, with that peculiar leonine manner which generally succeeds in cowering all opposition, insisted in pushing me to the wall as a culprit. Other members of the Council came to his aid to prevent the meeting being enlightened, and to stifle discussion on the subject, until Mr. Sawyer, who was present at the former meeting, came to my aid, and Mr. Glaisher, finding that it was not going to be so easy a matter to extinguish me as he had thought, and that the large majority of the meeting was with me, subsided into his unofficial urbanity.

If it was "unfortunate" that I tendered a commercial journal, that misfortune is due to him who asked me for evidence when he should have asked the chairman of the evening; and if the discussion took an unnecessary asperity, it was owing entirely to the manner in which the President took it up. I am not partial to being "sat down on," and the man who tries the experiment does not find me so much like a mollusc as a porcupine; and Mr. Glaisher's manner of performing this feat is, despite your encomiums, characterized neither by "suavity," "firmness," or "knowledge of the forms of public business;" but is—and I call on all men who have been compelled to oppose his ideas, either in the Council or in the Society, to bear witness—rude and arbitrary against an individual whom he does not favour, and the reverse of firm when opposed by a majority; while his rulings are frequently absurd, and he continually takes up questions raised before the Society as a partisan, which, as the presiding officer, he has no right to do. When he asked for specific information as to the inaccuracy of the minutes, and I mentioned the omission, he ruled that an omission was not an "inaccuracy"! And he frequently makes rulings as absurd as this.

His decision (and your opinion) that he is elected President for life is equally unfounded in any plain reading of the rules: "All officers shall be annually elected, with the exception of those who do not go out of office by rotation or otherwise;" but as the President does not go out of office by rotation or otherwise, he is not to be elected "annually," but for such time as the Society may see fit to designate. But no man can base a claim to life appointment without an explicit sanction of the laws. According to the actual rules, which are the most clumsy and ill-constructed that, in a considerable experience of deliberative bodies, I have ever seen, the President is to be elected whenever the Society please



to elect him, and he may be changed at every meeting if they so decide. To maintain that the President does not go out because the rules do not say when he shall go out, is to maintain that he can never be replaced because the rules do not say that he is to be considered as vacating the office after death. It is quite sufficient that the laws do not say that he holds during life or until resignation.

As to the discrepancy between the nominations of the reformers in the Society, and their opposition to the Council's nominations, you make a mistake. *We have never pretended that a non-resident member should be excluded from the Council*; to do so would be unjust. We desire to see new and independent members of the Society continually introduced in the Council, and it has been very broadly asserted that the nominations of the Council have been determined by the sympathy of the nominees in the policy which the reform is intended to replace with another, broader and more in accordance with the interests of the Society; and we take it for granted that if they are friends of the present system they will not favour the reform we desire. We knew Mr. Elwell as an intelligent writer on photography and a clever photographer, a new man, and we put his name on the list as such, without any communication with him.

It is incorrect also to say that every one of the opposition lists contain "some" names on the Council list. The list of the requisitionists and my own contain but one—that of the Treasurer; all the new nominations for members of Council differ from those of the Council.

In reply to your foot-note to my letter in your last, permit me to say that the fact of my letter on the reforms not being mentioned in Council proves nothing; it was not likely to be openly discussed, as I had friends in the Council; but I was warned before the meeting that my letter had been ill-received by the Council (as I knew it would be), and I did not attend the nominating meeting purposely, that there might be no obstacle to throwing me overboard, which, for good reasons, I preferred to retiring myself, as I had previously determined to do. At the meeting of Council called to consider the requisition which I was persuaded, against my wishes, to attend, the manner of the majority of Council was studiously cool and offensive, and that of Mr. Glaisher rude and overbearing in the highest degree—even insulting; and at the adjourned Council meeting (which I did not attend) Dr. Mann and Mr. Whiting, who presented an amended requisition, were similarly received, and both resigned the next day in consequence. A few weeks previously Mr. Le Neve Foster, one of the oldest and most earnest members of the Society, resigned in consequence of what he considered discourteous treatment of a suggestion of reform in the management of the Journal. All this will show how friendly the majority in the Council was to reform.

The first requisition was made as vague as the rules permitted, expressly to leave the Council and Society at liberty to modify the measures proposed without direct conflict; but the large majority of the Council, so far from being actuated by the "broadest spirit," or favouring the reforms, raised every quibble against the requisition, and finally declined to comply with it because it was not exacting enough; and in this opposition Mr. Glaisher was the most earnest—perhaps violent would be the word. I assert unreservedly that the majority of the present Council was opposed to the reforms demanded by the requisition, and that the determination has been expressed to "fight us to the bitter end."

You say the reforms in question would have been received favourably by the Council, and have been carried "in their broadest spirit." Why then were we told that the dissatisfaction which demands them was only the feeling of a few discontented persons, and why should the Council make an act of hostility of their proposal in the only form permitted by our laws? Has the Council so become the master of the Society that its dignity is outraged by a requisition which it is in the clear right of the members to make? Is the Council to become a higher caste among us, that its dignity will not brook being told what it shall or shall not do? The officers of the Society are but its delegates, and their title to the gratitude of the Society is in their doing well and gracefully the service committed to them. Any dictatorial airs or appearance of hanging to office as a right is sure, if submitted to, to injure the efficiency of the Society, and, if protested against, lower the dignity of the officer. A council that does its work thoroughly when in office, and when it goes out does so with a cheerfulness as complete, is sure to do the most good in a society constituted like ours.—Yours truly,

S. ATTENBURY GARDENS, S.W., Jan. 19th. W. STILLMAN.

[We regret that Mr. Stillman forces us into a position which is

very distasteful to us. He blunders most egregiously. He is at once inexact in statement, erroneous in deduction, and, as we feel assured, altogether wrong in the opinions he expressed. Unfortunately, he is, moreover, dogmatic in the exact ratio of his inaccuracy. And—*hinc illæ lachrymæ*—he compels us to say so. He confounds the "minutes" with a "report" of the discussions. Had Mr. Stillman made an enquiry as to the accuracy of the minutes, he would have been in order; but, instead of making an enquiry, he distinctly challenged the accuracy of the minutes, although he admitted he was not present at the meeting to which they referred, and knew nothing whatever about them except by hearsay. It surely needs no argument to show that Mr. Stillman assumed a false position. We repeat, therefore, that it was "unfortunate" that a jarring chord should have been struck by such an irregularity, and that it was indiscreet to offer as evidence a journalistic report of the accuracy of which he personally knew nothing. If his object were to institute a comparison between the report he produced and that in the Society's Journal, he was still more irregular, as no question of the Journal was before the meeting, but simply the minutes, which constitute, as everyone knows, a brief official summary of actual transactions, not of discussions. Omission of details of discussions in such minutes is certainly not inaccuracy, and Mr. Stillman must be singularly unfamiliar with the business of scientific meetings if he fancies that the official minutes of a society should constitute a record of its discussion.

We cannot discuss the Chairman's character or conduct with Mr. Stillman here, as we can scarcely expect him to admire very fervently the firmness with which his irregularity was repressed. Mr. Stillman dogmatizes on the tenure of the President's office. We will content ourselves by saying that we accept, in preference to his exposition, the ruling of the late Chief Baron, upwards of half a century of whose life was spent chiefly in the accurate construing of the meaning of laws. In any case, the question needs no discussion, as the Chairman, although holding his office for life, is prepared to surrender it at any moment to the Society.

There is one sentence placed by Mr. Stillman in italics to give it especial emphasis. He says: "We have never pretended that a non-resident member should be excluded from the Council; to do so would be unjust." This statement is opposed to facts within our own knowledge. The gentleman whose name stands at the head of the requisitionists, in conversation with ourselves, made this a leading complaint against the nomination of the Council of Mr. Swan, who, however distinguished, he said, was resident in the country, and not likely to attend the meetings. Regarding Mr. Elwell, we probably have had more communication with him than his nominators, and not only endorse all they say in his favour, but at any time would have pleasure in voting for him.

In relation to our statement that some names proposed in the new list were identical with those proposed by the Council, Mr. Stillman first denies its accuracy, and then proceeds to prove, by admitting that even his list contained one such name, that in spirit at least our remark was accurate. We give him the full value of the quibble on the word "some."

Mr. Stillman again repeats that he was placed on the retiring list because of a letter he had written, although he now admits that it was not—as he before affirmed—discussed at the Council meeting. We repeat, that having been present at the meeting, we never heard his letter named, and that he was placed on the retiring list because of scant attendance.

In regard to the disposition of the Council in relation to reform, he admits a foregone conclusion, and is, therefore, the worst possible kind of witness; and the fact that he had been little in attendance at the Council does not increase the value of his evidence. He knows that we feel debarred, by our regard for the privacy of the Council room, from discussing the proceedings within its walls to which he refers; but we are bound to affirm that we have never seen anything of the "coolness," "offensiveness," "rudeness," nor "overbearing" manner to which reference is made, and can only suggest to Mr. Stillman that his foregone conclusion he had done something offensive, which he confesses, led him to imagine these things; in short, that they are subjective, not objective, phenomena. So also in relation to the first requisition: there was no opposition whatever. Mr. Stillman says the requisition was vague. That is true: it was so vague that it was illegal, and could not be acted on. As proof of an absence of antagonism, the Council, in order to avoid the delay which the informal requisition involved, invited the requisitionists to meet them, with a view to co-operate with them in securing the desiderated reforms. This the requisitionists declined, and, by doing so, at least gave colour to the statements which have been circulated, that the agitation originated with



some discontented men, whose object was antagonism to the Council more than reform. Our knowledge of the members of the Council, officially and personally, extends over a much longer period of years than Mr. Stillman has known the Society, and we repeat our conviction, based on knowledge—not conjecture—that the majority of them would have been willing at any time, and are now willing, to accept any reforms which may conduce to the prosperity of the Society, and also to acquiesce in, and aid in carrying out, any change which a majority of the members may desire, even should such changes not entirely chime with their own convictions. The statement that the Council have ever expressed an intention “to fight to the bitter end” is not only untrue, but is the exact opposite of the truth. No such sentiment has either been entertained or expressed by the Council as a body, nor, have we reason to believe, by a single individual connected with it.—Ed.]

#### SUNDAY PHOTOGRAPHY.

SIR,—The report of remarks made by Mr. Tunny at the close of a paper read before the Edinburgh Photographic Society on the evening of Wednesday, the 7th inst., contains the following words:—“He (Mr. Tunny) did not believe that there was a photographer in the country who had not done some photography on the Sabbath day.” I feel it my duty to enter my indignant protest against this sweeping clause.

Of Mr. Tunny's own practice I know nothing; but I believe that not a few of us are still old-fashioned enough to regard as obligatory the words, “Six days shalt thou labour and do all thy work; but the seventh is the Sabbath of the Lord thy God.” For myself I can say that I have never, directly or indirectly, put my hand to the work of photography on the Sabbath day.—I am, sir, your obedient servant,  
GEORGE BRUCE.

Dunse, 19th January, 1874.

#### DRY PLATES.

MY DEAR SIR,—Your correspondent F. R. is good enough to mention my publication on dry plates, and he desires more precise details regarding the degree of desiccation possessed by plates prepared by different dry plate processes.

At the first glance one might be disposed to look upon such a question as a joke, for when we talk of dry plates, we mean plates covered with a preparation perfectly dry; nevertheless, as there are authors who have maintained that in order to remain sensitive the prepared plates should not appear to be perfectly dry, the matter merits discussion.

As far as my own experience goes, it is impossible to prepare plates which will keep well and yield good results without they are dried thoroughly and uniformly. The question, therefore, remains whether the drying should be accelerated, or forced artificially, and whether such a mode of drying is advantageous.

I know that the inventor of the coffee process, Colonel Baratti, has stated that plates dried rapidly were more sensitive; but I myself have never found any advantage to be possessed by such plates. I must, indeed, on the contrary, affirm that every time that I dried my plates artificially and quickly, I only obtained bad and unequal results; when only a current of air was employed for the purpose even, I obtained them almost altogether insensitive. It is with some amount of conviction that I recommend, therefore, a mild and gradual drying of the film, such as I have indicated in my publication; and never to employ plates which are not perfectly dry, for I have mentioned a method of discovering whether this is the case or not.

But to revert to the opinion of Colonel Baratti: I know that he was of necessity compelled to accelerate the drying of his plates (as he himself acknowledged) in order to employ the same in a perfectly dry condition, and this is the reason for his believing in an augmentation of sensitiveness.

I remember that to prove that the drying was perfect he put the dry plates into a baker's oven, and he informed me that after being kept some time they answered well, but he never said that such radical treatment was capable of producing instantaneous pictures.

In any case, we may infer that when one speaks of dry plates, these words should be taken in their complete meaning.

Lausanne, Jan. 19th, 1874.

A. DE CONSTANT;

#### A PITCH AND BOILED OIL PROCESS—A SEASONABLE HINT.

DEAR SIR,—In offering the above process to my photographic brethren, I beg to say I have not placed it under patent restrictions, which I cannot but think a great mistake, for my knowledge

of human nature teaches me that everything is valued according to its cost.

I may instance your most beautiful “collodio-chloride process,” which was most generously given to the photographic world, and which has met with but a cold reception.

Had photographers been compelled to pay £10 or £20 for the privilege of working this process, much eagerness would have been evinced, and an enormous benefit conferred on photography by the practice of what is really a permanent printing process.

Now for the pitch and boiled oil. Take two pennyworth of the former, and quarter of a pint of the latter, and simmer in a pipkin until the two are united and form rather a thin liquid; then, with a sash tool, go over those parts of your studio which are not water-tight; even broken glass in a skylight.

I have a glass room with a flat roof, which has cost me a little fortune in paint and putty, and which has been the bane of my life for a considerable time, in consequence of the rain coming in, in all directions. Well, sir, for an expense of eight shillings, seven of which was for labour, I have rendered it perfectly water tight, even in this horrible weather, anticipating not gratitude, but seathing remarks for the want of novelty in the suggestion.—I beg to sign myself, your obedient servant,  
No NAME.

#### THE CHEMICAL ACTION OF LIGHT.

SIR,—Again and again has this subject been discussed and speculated on, but the action of light still leaves darkness on our minds. Any new thoughts may prove useful to elucidate the knowledge sought, so I contribute what has for a long time passed through my mind.

We know that all substances reflect light according to their various surfaces, the effect of which on our brains is to give form, colour, and distance. The chemical rays in like manner as reflected from surfaces, and more or less affect various sensitive films, and in an infinitely stronger way from direct sunlight. What if these hitherto called chemical rays should prove to be the electric part of light? We know that their effect is even retained on prepared surfaces, and can be given off again from these surfaces, though for some time taken away and covered up from the influence of light. What if the invisible change, hitherto concealed from our minds, should be to convert a faintly acid or neutral state of the sensitive film, be it what it may, to an alkaline state, and thus allow silver to be deposited on those parts rendered alkaline by the electric action of the rays of light, while it is not deposited in those parts left unaltered, in an acid or neutral state. It is unnecessary to detail results well known to photographers, which are all explained, if this theory be a correct one; and if correct, would it not, again, be another proof of that contrary action by means of which the Maker of all things always cause nature to work?  
W. J. C. M.

#### Talk in the Studio.

NOMINATIONS AT THE PHOTOGRAPHIC SOCIETY.—Col. Stuart Wortley writes to explain why he placed the names of certain gentlemen on his nomination list, at the Photographic Meeting, who have since declined to accept the nomination. He based his action, he states, on Parliamentary experience, where he learnt the importance of an active opposition “to keep the Government up to its work.” He therefore nominated to office two gentlemen he believed to be the originators of the agitation, or, at all events, the two principal actors in it. Without discussing the question at length, we may point out that the analogy between Parliament and a scientific society fails, as there is little in common between their purposes and action. The continued existence of “an opposition” in the Photographic Society would be simply destructive of every purpose of the Society, and also of the Society itself. In the real or fancied existence of a grievance, agitations may occasionally arise in any society; and in such case the sooner they are ventilated, and the questions settled, the better, and the sooner afterwards that “oppositions” are forgotten, the happier for the society.

THE DISPUTED ACCURACY OF THE “GROTTO” PHOTOGRAPHS.—Referring to the disputed accuracy of the photographs of the “grotto” at Cheriton Mill, in the Tichborne trial, to which we referred in our last, Mr. Guildford Onslow, M.P., writes to a daily contemporary and says:—“I beg to say I requested that eminent photographer, Mr. Wyatt, of Fareham, to take me certain photographs which were produced in court, and which were perfectly correct and accurate at the time he took them, since which the place is completely altered, owing to sheep

having been peened, as I saw them, all over it, so as to transform what was then a jungle into what is now a desert. In short, the place is now as much like what it was in July as a fox-covert is to Stonehenge." Mr. Wyatt's name is well known as a skilful photographer, who would not be likely to bungle his work; but the present tenant of the place a Mr. Stratton, writes to the *Times* and utterly denies that any change has taken place. The question will then arise, were the photographs "cooked," and how?

**CUSSON'S PHOTOGRAPHIC ALMANAC.**—We have received from Mr. D. H. Cusson's, of Southport, a copy of his "Photographer's Pocket Almanac and Reminder for 1873." As on former occasions, it is a useful and handy little calendar and memorandum book for the waistcoat pocket or for the pocket-book.

**PHOTOGRAPHERS' ACCOUNT KEEPING.**—We have received a sample sheet of Mr. George Hooper's system of Book-keeping for Photographers. As we have before said, the plan is carefully devised and systematic, and will prove a valuable aid in an often neglected department of the photographic business.

**PHOTOGRAPHIC MATERIALS.**—We have received from Messrs. Payne and Chapman, of Manchester, a very complete catalogue of the apparatus and materials they are prepared to supply to photographers.

## To Correspondents.

**THOMAS BAYNTON.**—A suitable etching ground for producing an etched negative on a glass plate might be produced, we should think, by the use of a black varnish. Possibly Bates' black varnish, used as sold, or diluted with turpentine, would answer. Brunswick black, dissolved in turpentine, with the addition of a few drops of castor oil to prevent the film becoming too brittle, might answer. We have seen very good results produced by using a very powdery collodion, sensitizing in the silver bath as usual, exposing to diffused light, then developing and fixing. If a tough, horny collodion be employed, the film tears instead of giving a clean line under the point of the etching needle.

**ONE IN A FIX.**—The presence of small defects in the magnesium ribbon has a tendency to produce the trouble you describe, an unsteady light and occasional stoppage in the combustion. A fresh supply of the ribbon will probably prove a remedy. The light will also go out if the clock-work arrangement fail to push forward the ribbon duly.

**SCOTTICON.**—You will find many formulæ in our back volumes and *YEAR-BOOKS*. A very good process, yielding fine results, is given on page 118 of our *YEAR-BOOK* for 1873. Here is another:—Take iodide of potassium six grains, bromide of potassium two grains, and chloride of sodium one grain, and dissolve in an ounce of water. The addition of one grain of gelatine to each two or three ounces of solution will keep the image better on the surface. Sensitize on a fifty-grain silver bath containing twenty minims of acetic acid to each ounce. Develop either with pyro and acetic acid, or with gallic acid.

**J. S. H. (Clapham).**—An "aceto-nitrate bath" was a familiar thing to dry-plate workers a few years ago, when the collodion-albumen process was commonly worked. Its formulæ varied, but the following was a common one:—Nitrate of silver forty grains, acetic acid thirty minims, water one ounce. Your bath, as you will see, had insufficient acetic acid. We regret that we have not time to answer photographic questions by post.

**ENLARGED NEGATIVE.**—We cannot undertake to pronounce definitely which is the best mode of producing a transparency from which to obtain an enlarged negative. You must read what has been published, examine results, and decide for yourself. It is no new doctrine, as you seem to fancy, that so much depends upon the transparency, and that it should be much over-exposed. In our *YEAR-BOOK* for 1863, upwards of eleven years ago, in describing the production of enlarged negatives, we said:—"On the perfectness of the transparency the result largely depends. It should be very full of detail, and apparently much over-exposed, according to the usual standard of transparencies for the stereoscope." One chief cause of the improved quality of modern enlargements is the greater attention which has been given to the subject, and another the practice of retouching at some stage of the process.

**ANTOINETTE.**—You will find a good method of giving a grain to a photograph in Mr. Croughton's recent paper before the South London Photographic Society, which we published a few weeks ago. 2. Permanganate of potash is, we believe, occasionally prescribed in weak solution as a wash to sores and ulcers. It will have a cleansing influence, aiding in the removal of putrid discharges. 3. Permanganate of potash used in solution (say five grains to the ounce) applied to a carbon transparency will increase its density. Such transparencies may be tinted.

**R. H. (Swansea).**—As you state the matter, you have a good case against the manufacturers sending out the copies of your photograph. The simplest mode of proceeding is by summons before a magistrate, who can exercise summary jurisdiction, and you can, on proving your claim, recover penalties on each copy issued, not exceeding ten pounds. The *Fine Art Copyright Act*, issued in 1862, contains full details. You had better, however, take the advice of a solicitor. You can obtain permission to examine the Registrar's books at Stationers' Hall on payment of one shilling, and can obtain such a copy of the registration as will be received as evidence in a court of law on payment of five shillings.

**G. W. R.**—We cannot tell of whom a large lens may be borrowed, unless you have some friend who can lend it. We do not know of any one who makes a business of lending apparatus. Some years ago some letters were published suggesting the advantages to photographers if some one would establish a lending agency, but nothing came of it. 2. Some ten or a dozen years ago we described the mode of examining non-actinic glass by means of the spectroscope, and for some years kept up the practice of so examining samples for our readers. The common prism must, of course, be made into a spectroscope. Any one handy in such manufactures could make a spectroscope very cheaply; but not an unpractised hand.

**IGNORAMUS.**—You will find the form of studio to which Mr. Fry refers described, with diagram, in Mr. Slingsby's article in our *YEAR-BOOK* for 1871. Hot development is only recommended for use in very cold weather. We hope shortly to publish a further communication from Mr. Fry on the subject of rapidity.

**A. G. W.**—You should have stated how and by what formula you prepared your toning bath. Merely stating that you follow Hardwich is insufficient, as he gave various formulæ. The dark pink colouration of your prints is due to a general reduction of the gold all over the print. This may be due to a variety of causes.

It may be the result of using an unsuitable formula; it may be, and very probably is, due to toning in daylight; it may be due to excess of nitrate of silver soaked into the paper upon which the portraits are printed; it may be due to touching the toning bath with fingers contaminated with some other chemicals. Some of the prints, No. 5 being a notable example, are not perfectly fixed, the brown, mottled staining being due to that cause. Imperfect fixation arises from the use of a fixing bath too weak, or exhausted, or from too short immersion, or from the prints sticking together. A good toning bath may be made by dissolving one grain of chloride of gold and thirty grains of acetate of soda in six ounces of water. It should stand a day or two after mixing before use. The fixing bath should consist of four ounces of hyposulphite of soda in a pint of water. It should not be used at a temperature under 60° Fahr., and should only be used for one batch of prints.

**W. PERRY.**—The alteration in the address on the envelope you enclose was made in our office. 2. The matter entirely depends on the nature of the bargain. If the "right to publish" has been definitely sold, of course it cannot be sold again to second person. The power to sell to other people will entirely depend on the terms of the first bargain. 3. Copyright in a picture continues during the life of the author, and for seven years after his death.

**J. GRIFFITHS.**—There is a very good method described on page 70 of our *YEAR-BOOK* for 1870.

**ANOTHER MEMBER OF THE PHOTOGRAPHIC SOCIETY** writes a long letter regarding the Photographic Society. He especially asks why, if, as has been alleged, there is wide-spread dissatisfaction, was its expression confined, at the last full meeting, to two or three persons, who have the credit of being its originators. He proceeds to comment on what he regards as the "absurd position" of Mr. Stillman in disputing the correctness of minutes of which he knew, personally, nothing. Our correspondent's letter is a long one, and our pages are much too full of this unimportant agitation. Our correspondent's question as to whether all those signing the requisition were really members of the Society, and whether some of those who were members were not technically disqualified, should not be put to us, but to the President at the meeting.

**G. R.**—The loose fog, which may be removed by the fingers, may be due to various causes. It is very frequently due to the use of a newly mixed developer, which, after keeping a few days, will work cleaner. It is due at times to insufficient restraining acid in the developer, and sometimes to impurity in the acetic acid employed. If the acetic acid be pure, increasing the proportion will generally stop the fog; or try the addition of thirty grains of sugar to the ounce.

**DRAF AND DUMB ARTIST.**—Thanks; we shall give details in our next, and also refer to your former communications.

**LARGE PHOTOGRAPHS.**—Mr. Aldridge's communication on this subject, together with several other letters and articles in type, are compelled, by the pressure in our space, to stand over till next week.

Several Correspondents in our next.



## The Photographic News, January 30, 1874.

### KRONE'S DRY PROCESS.

DR. HERMANN KRONE, the President of the Dresden Photographic Society and editor of the *Helios*, has for some time past paid considerable attention to the matter of dry processes, with a view of considering their adoption in astronomical work, and especially on the occasion of the approaching transit of Venus.\* Dr. Krone has now been selected by the German Government to undertake the photographic arrangements of the German expedition to be despatched to the Auckland Islands (south of New Zealand) in June next. The appointment is one upon which we sincerely congratulate our learned colleague, for it is a post for which he is especially fitted, being both a practical and scientific photographer. During his absence, the journal which he has founded and edited since its birth will be discontinued; but we hope that photographers will still have the benefit of his experiences during his temporary sojourn abroad conveyed to them through some other medium. In the last number of *Helios* we find a description of a new dry process by its editor, and as this will doubtless be the method he intends to employ in the Southern Ocean, our readers cannot fail to be interested in it.

The method permits the preparation in advance of any number of plates, which may be preserved in a damp climate, and are perfectly insensitive to light of a certain degree of intensity. The sensitizing and washing of the films may be fulfilled in a few minutes, and may, should necessity compel such a course, be manipulated by operators little skilled in the business. If desired, however, the plates may be prepared at once from beginning to end, and then require less time and less care, less silver and less rinsing water, than are necessary in practising the collodio-albumen method. The dry plates, prepared either at one time or at two separate operations, are as sensitive, and yield as sharply-defined negatives, as any collodio-albumen plates, while the mechanical stability of the film is not inferior. At the same time, they may be employed just as well in a moist atmosphere as in a hot dry temperature, remaining clean and sensitive for a long time, and not liable, as in the case of the above-mentioned plates, to undergo spontaneous decomposition by the formation of sulphide of silver. The method, moreover, possesses the great advantage that the solutions and baths employed are not in any way changed by continued employment, thus jeopardizing the certainty of the results; whilst in the collodio-albumen method, not only the collodion and the silver bath, but also the albumen, and especially the second sensitizing solution, after it has been employed once, are for ever altered, so that repeated testing of the same is required. The last named silver solution must, indeed, always be applied fresh. In my recent method, however, the solutions and baths, if only carefully carried, will remain good on a journey for years, and may be employed to the last drop. With some little practice, too, the process yields constantly good results.

I now proceed to give practical details of the method, more especially in relation to its adaptation to the Transit of Venus Expedition. The following are the component parts of the process:—

a. *Silver Alcohol*.—A test tube is obtained, together with the following ingredients:—

Nitrate of silver	...	...	10 grammes
Distilled water	...	...	10 "
Absolute alcohol	...	...	250 cub. cents.
Nitric acid	...	...	5 drops

The nitrate of silver is put into the test-tube, and the distilled water added; by gently heating a solution of the silver is brought about, and this is then gently added by degrees and during agitation to the absolute alcohol; the test-tube

is rinsed out with a little of the alcohol, so that none of the silver shall remain behind, and, finally, the five drops of nitric acid are added. This solution is termed silver alcohol, and it does not need filtration.

b. *Normal Collodion*.—This is made up of—

Alcohol (nearly absolute)	...	1 litre
Pyroxilin	...	60 to 70 grammes
(according to solubility)		
Ether	...	1 litre.

The mixture is allowed to stand, and then the upper and clearer portion decanted for use. This collodion is about double the thickness of the ordinary material.

c. *Silver Collodion*.—This is prepared according to the undermentioned formula:—

Normal collodion	...	250 cub. cents.
Silver collodion	...	125 "
Ether	...	125 "

If this collodion prove to be too thick, it is diluted to any desirable extent with a mixture of alcohol and ether kept ready for the purpose.

c. 1 solution is made up of—

Silver alcohol	...	124 cub. cents.
Absolute alcohol	...	125 "
Ether	...	250 "

The collodion, when ready for use, must neither be too thick nor too thin, and when the consistence has been approved of by means of a trial plate, there are added four to six drops of negative varnish for every ten cubic centimetres of silver collodion. The varnish of Schering, of Berlin, as also that of Professor Vogel, is very suitable for the purpose.

d. *Negative Varnish* is thus constituted:—

White shellac	...	3 parts
Sandrac	...	3 "
Alcohol (at 55 deg.)	...	40 "

The silver collodion, if well stoppered and kept in the dark, may be preserved for years, although after a time it assumes a light brownish tint. It may be poured with the same ease as iodized collodion. No preliminary coating is required in the preparation of plates by this method, for blisters or raising of the film are things unknown. The well-cleaned and polished glass plates are simply coated with collodion, and then put into a dipping bath of a vertical or horizontal nature, containing the undermentioned solution, viz.:—

e. *Iodide of Potassium Bath*.—This is made up of—

Iodide of potassium	...	20 grammes
Bromide of potassium	...	20 "
Distilled water	...	1 litre
Silver collodion containing varnish	...	5 drops

The iodide and bromide are dissolved in the distilled water, and the five drops of silver collodion are then added. The solution is well shaken for a few minutes, and then filtered through filter-paper. To remove any trace of hyposulphite of soda from the latter, it should be first washed in several changes of water, and subsequently twice rinsed with distilled water.

(To be continued.)

### "THE PENCIL OF NATURE."

BY A. BROTHES, F.R.A.S.\*

Our Secretary has announced that I purpose this evening to read a paper on the "Pencil of Nature." I intend merely to call your attention to the present condition of some prints in Nos. I. and III. of that work, and to make some general remarks on the fading of photographs.

It has often occurred to me that one of the reasons why so few papers are read before our Society is that members hesitate to undertake the writing of a formal paper. It is much easier to come to the meetings prepared to speak on a certain subject than to sit down to the task of writing. A short address would, in most cases, answer the purpose of introducing a subject for discussion; and it is this

\* See article by Dr. Krone on "Stable Photographic Films," PHOTOGRAPHIC NEWS, 7th March, 1873.

\* Read before the Manchester Photographic Society.

which makes our meetings useful and interesting, and there is no trouble of, possibly, a tedious preparation. A little previous thought, and a few examples for illustration, are alone necessary. The announcement of a subject for discussion has a marked influence on the attendance of members, and I am glad to be able to say that for our next two meetings papers or addresses are promised.

We have all heard of the instability of ordinary photographs on paper: and if we did not know it from experience, we are constantly reminded of the fact by writers in the various newspapers and periodicals. If those who write understood their subject, and refrained from making sweeping assertions, I, for one, would not complain. But I contend for the stability of photographs, and complain that imperfectly-informed writers do our art serious injustice. Take the following as an illustration. It is from the *Lithographer*, No. 42. The writer, in an article on "The Correlation of Photography, Lithography, and Typography," says, respecting photographs:—

"There are few persons who have not suffered from the disappointment occasioned by the ephemeral character of the ordinary photograph. The portrait of a child, a sister, a parent, or a wife, has been treasured, perhaps, for years, and its owner has had the pleasing impression that in the picture the loved, but lost, one lives again. The view of a noble landscape, seen, perhaps, under circumstances that can never recur, has remained in our favourite album, and the happy anticipation indulged in that in some quiet hour we may, in fancy, once more visit the scene. Alas! when brought to the light our pictures are gone. The lineaments of the cherished features, the lights and shade of the landscape, are all blurred and blotted out, and there is little before us but a confused series of shades of brown, pink, and yellow.

"We have by our side a copy of the *Photographie Art Journal*, published in 1858. One cannot help smiling at the seedy and sickly appearance of the good people who once adorned its pages, and the landscapes fading into that distance which assuredly does not, in their case, lend any kind of enchantment to the view. Dr. Trench, Dr. W. Russell, Miss Nightingale, and Samuel Lover, are or were all there, whilst Windsor Castle and Stoke Pogis have got into a London fog. The editor well says in his preface that, as a graphic art, the strongest recommendation of photography is fidelity—a truthfulness impossible to the productions of the other graphic arts; but if he could have added durability to fidelity, he would have been able to write in a far different strain from what appears in his closely-printed pages.

"This non-permanency is the great defect of the photograph, and it almost outweighs all its other advantages—even the absolute accuracy to nature which it presents, and the ease and simplicity with which the picture has been obtained. What still further aggravates the matter is, that this fleeting character is probably inherent in the ordinary photograph; for the very action of light which forms the image tends to destroy it—even as our life is gradually exhausted by the very means we adopt to preserve it."

Now it cannot be denied that some photographs do fade; so do water-colour drawings. Some oil paintings change colour (who does not remember the "Strawberry Girl?"), and even become almost valueless. But would the newspaper and periodical writers make the same charge of want of stability of water or oil colours because some have faded? I have generally noticed that ordinary photographs are called "ephemeral" when something is to be described which is supposed to be permanent, and that will be seen to be the case in the article from which the above question is taken.

I have here, perhaps, the best example of a faded photograph which you have ever seen. It is stamped on the back "Patent Talbotype, or Sun Picture," and in ink is written "The Boulevards, Paris." Without these marks it would be very difficult to know what was once on the paper. The print was issued in the "Pencil of Nature," in 1844. Fortunately I have here another print from the same negative, printed in the same year, and apparently in the same condition now as it was nearly thirty years ago. I have also here other examples from the same work—some faded and others perfect.

Can this want of stability in some cases, and permanence

in others, be explained? I think the cause is obvious. The print of "The Boulevards—now almost white paper—has evidently been fastened to the mounting-board with some substance which has injuriously affected the print. The other print of the same subject is not attached to the card, excepting for about a quarter of an inch around the edges, and this quarter of an inch of the photograph, you will notice, is as completely faded as the other example. Can further proof be wanting that the mounting material has caused the mischief? It would be valuable and interesting if the history of these two prints could be made known. Was gum or paste used? and why were some of the prints firmly attached to the card, while others were fastened at the edges only? I wish it to be noticed that my remarks refer to all the prints I now produce. The four fastened to the mounts are badly faded; all the rest are in good condition.

I am aware that this subject has often engaged the attention of photographers, and is surrounded by many difficulties. It is certainly very mysterious why some prints fade and others do not. I have just selected from our portfolio a print of Haddon Hall. It was printed on January 5th, 1855, for a special purpose, and was submitted to the council of this society on the evening of the day named. The print was toned in the old hypo. and gold bath, and was merely rinsed in water and then mounted with gelatine. It is on plain paper. I wrote on the back of the print, "Not washed," adding the date, and it has remained in the portfolio until this evening. I will endeavour to show you its present condition by means of the magnesium light, and you will see that it appears to be in the same condition as when first printed. There is a small yellow mark, but that was done when I last saw the print, about fifteen years since.

I have also selected from the portfolio two other prints done in 1855. One is the portrait of Mr. (now Sir William) Fairbairn, and a copy of an oil painting. These appear to be unchanged. I have to thank Mr. Lund for bringing two prints of the same subjects, and those seem to be unchanged also. It has to be borne in mind that all prints are not printed to the same depth. Some are lighter than others, and when placed beside the darker ones appear to be changed when they are not. Our President says his print of Sir W. Fairbairn faded. Perhaps it was not taken care of. I do not say that my prints are less liable to fade than others; but I do contend that if every care be taken in the preparation and mounting of photographs, and they are then as carefully preserved as water-colour drawings, we have nothing to complain of as to their permanency. As a rule, photographs are not taken care of, and in this is to be found one explanation of their fading.

It is often said that a photograph has faded when the paper only has changed colour. Here is an example in a group of three figures—a gentleman and two little boys. One of them, then about seven years old, is now a member of our council—evidence of the age of the print. It will be seen that the half-tones in this print are good, but the paper appears somewhat yellow. It will be remembered that this yellowness of prints was frequently the effect of the old system of toning. Here are examples which the magnesium light will show you to be perfect in every respect, excepting the colour of the paper.

Much of the discredit under which photographers have fallen arises from cheapness and carelessness. Look through any friend's album, and the probability is that all the "seedy" prints have been done during some sea-side visit, or have emanated from some of those places of business noted for cheapness rather than quality. Not many months since I was examining a celebrated book of travels, containing the portrait of the author of the book. This book had not been published three months, and yet the portrait was fading. The work was sold in thousands, and there can be no doubt, I think, that cheapness had something to do with the faded print.



## APPENDIX TO THE PAPER ON THE MANUFACTURE OF LIMES FOR THE LANTERN.

BY M. NOTON.\*

THE inferiority of the light I had here at our last meeting, compared with the good one frequently obtained at home, has compelled me to come before you again this evening to explain what I believe to be the reason, and to give you an account of the remedies I have adopted to overcome the defect.

The primary cause was a deficiency of pressure of the coal gas. Secondly, I had ten feet of india-rubber tubing from the chandelier to the lantern, six feet of which were wired, and this retarded the flow of the gas very much; so between the two I had an insufficient pressure to enable me to give you the amount of light you were led to expect.

When the oxygen was turned on the hydrogen was driven back, and it required the greatest nicety of adjustment of the oxygen tap to get a proper proportion of the two gases. The blowpipe or burner I used mixes the two gases just before issuing, and requires more pressure than those with the oxygen inside the hydrogen flame.

I thought I should have to use the latter form of burner in future, where probably there would be a diminished pressure of coal gas, and was about to fit to the lantern a good one I have, when it occurred to me to make and try a jet of larger bore. I made one about double the area of orifice. The two jets are on the table—the smaller-bore one being tipped with platinum, the other all brass.

I think it fortunate that I should be baffled as I was, for it has put me in possession of a remedy I had not before thought of. Instead of having only one jet, I shall be now armed with two or three of different bores in future, the same as when you go out with lenses of different foci to your cameras. Instead of the india-rubber tubing I had last time from the chandelier to the lantern, a copper pipe is now attached, and a pressure gauge is also applied, so that we may see what pressure we have to work with.

The next thing I have to mention is the lime cylinder. I have always been an advocate for the disc, but the cylinder is more convenient to make.

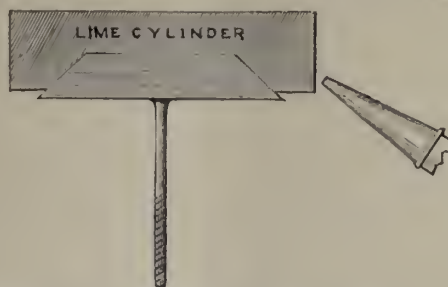
As an improvement I have, since our last meeting, made a small semicircular trough to hold the cylinder when laid horizontal, or in a line with the axis of the lenses, instead of vertical, the flame being applied to one of the flat ends of the lime cylinder (the hardest part) instead of about the middle of the side when vertical (the softest part)—another very simple matter. I consider this a very important improvement, for the following reasons:—

Supposing a solid cylinder to be only one and a-half inch long by five-eighths of an inch diameter, we at once convert it (by laying it down) into a disc one and a-half inch thick by five-eighths of an inch diameter, both ends being usable; we thus get a miniature sun of that diameter tolerably well defined. This being so satisfactory to me, I have ground down and re-made most of my lime cylinders over again, solid. No more drilling will be required now, nor any more vertical cylinders for the future.

I think a five-eighths better than a fourteen-eighths disc, because the whole of the smaller one is incandescent, and there will be more economy in the materials; also, the trough is a much easier thing to make than the disc-holder.

If the end of the lime cylinder does pit some, it can only be a good half-inch in diameter, and, if it becomes very deep, the other end is available immediately by turning the lime end for end; then, again, the two ends can be pared off, and you have a new lime surface to go on with. About three-eighths of an inch in depth is calcined at a time, so that a cylinder may be used about four times.

The curved surface of the vertical cylinder does not give off the greatest amount of light until it has become pitted to some extent, which is really an improvement as far as



that goes; but it appears to me that a flat surface at the beginning is the best under all circumstances.

## PHOTOGRAPHIC ILLUSTRATIONS OF THE ERUPTION OF VESUVIUS OF APRIL, 1872,

Collected and Prepared by J. M. BLACK, Esq., J.P.:

Explanatory Remarks.

BY DR. MANN.\*

In order that the several incidents of these pictures of volcanic destruction and devastation may be properly apprehended, it may be as well briefly to state what occurs when a stream of molten lava breaks out from one of the high slopes of Vesuvius at the time of an eruption. First, the lava runs down the steep side of the cone with a rapid descent for 800 or 1,000 feet, but not with the noise and splash that attend a sudden fall of water. It glides down on its fiery path with a quiet, stealthy, serpent-like movement, on account of its thick, pasty consistence, lapping round all objects that it encounters by the way. On reaching the gentler declivities around the base of the cone it slackens its speed, soon moving not faster than a man can easily walk, and even at a less rate than that towards the side, where a solidifying crust first begins to form. It soon melts out for itself a regular channel in the old ashes and lava, with banks rising some feet above the surface of the burning stream. As it gets further and further away from its source it spreads wider and wider, and moves more and more sluggishly, until at length it stops altogether in front, forming a massive rampart many tons in weight, with firm, hardened sides, due to the cooling crust, but with streaks of liquid fire still seen shining through here and there. The rampart grows bigger and thicker, until at last, with a tremendous crash, it rolls over, pushed out of the way by the pressure of the stream gathering behind, and then a new rampart begins to form; and this process is repeated again and again, until the *vis a tergo* of the flowing lava has been exhausted. From the influence of this process, and from the subsequent operation of air, the beds of old lava assume the appearance which has been well compared to that of a suddenly petrified sea, with waves twelve or fifteen feet high changed into stone, but with their sloping faces encumbered with loose clinkers that break away and roll down into the hollows of the undulations at the slightest touch. All the old lava lying between the Observatory and the base of the cone of Vesuvius is of this broken, billowy, clinker-encumbered character. Four photographs of the series are given to illustrate this peculiarity, and they do so very completely and beautifully. They were taken from the old lava of the eruption of 1858, below the Hermitage Hill, and very adequately represent the contorted and ropy structure of the rock. One of this series also shows the position of the Observatory in relation to these lava-deposits after the eruption of 1858.

One of the photographs represents the appearance of the eruptive fissure of 1861. on the south-west side of the mountain, near Torre del Greco. The fissure was 2,000 yard

\* A communication to the Manchester Photographic Society.

\* Continued from page 39.

long; and in this eruption there were eleven craterlets vomiting ashes; but only one emitted any lava, and that in small quantities.

Three of the photographs give the form and appearance of the terminal crater on the summit of the cone ten days after the commencement of the eruption of 1872, and when all eruptive action had ceased. The first of these pictures of the great crater shows the aspect of the cone as it appeared from a mound of ashes situated in the fissure opened out on the *Atrio del Cavallo*. Several small fumaroles still emitted sulphurous-acid and hydrochloric-acid vapours on this mound; and its surface was incrustated with chloride of iron. In this photograph the cliffs of Monte Somma are seen to the left; and in the centre is shown the great rent, extending through one side of the cone in a north and south direction, from the summit to its base, and some distance into the *Atrio del Cavallo* in front. Another and a larger photograph shows the interior of the crater, with the inner view of the same great rent. Bold masses of projecting rocks are seen descending into the abyss. The rounded and peaked eminences on the further rim of the crater were both active craterlets before the eruption. The ragged dark mass of lava on the right was coated brilliantly with sulphur and chlorides of iron and sodium. The front rim is formed of three distinct terraces; and upon the slope of one of these, inclined at an angle of about 30 degrees, rests a large volcanic bomb. The third view of the crater also represents its interior, and shows the appearance of two curious rocky projections which advanced towards each other from either side, like partition-walls. These joined together about 80 feet further down, and formed an arch below, by means of which the otherwise divided halves of the crater communicated. The walls of the crater here seemed to be almost perpendicular; but the eye could not make out the form of objects below this distinctly, on account of the prevalence of thick vapour. A small cone, however, could be discerned near the bottom, which seemed to be about 30 feet high; and the entire depth of the crater, from the upper rim to this cone, was approximately estimated at 650 feet.

Mr. Black states, in regard to the method by which his own photographs were made, that "some of the negatives were prepared according to Lee's formula for the collodion-bromide process, but that he was unfortunately compelled to use brackish water, and to submit to other unfavourable circumstances during their preparation. He wishes it also to be understood that the Vesuvian views were taken in an atmosphere charged with gases adverse to the sensitiveness and integrity of the plates, and deems it a marvel that the views on the cone were secured in even an imperfect form, as an almost suffocating atmosphere invested the place. The smaller view of the crater is somewhat obscure from this cause. The greater distinctness of the larger view was mainly due to a more favourable direction of the wind at the time when it was taken."

#### PRINTING AND TONING ALBUMEN PAPER.

BY R. M. CRESSEY.\*

ONE of the chief difficulties met with in photography, at the present day, is the want of less-complicated formulae and more care and skill. By adopting the following plan you will be enabled to produce as fine results as one could wish, with the least difficulty.

Procure any good sample of paper, and prepare a silver solution as follows:—Dissolve in ice-water sixty grains of silver to each ounce of water used. To every thirty-two ounces of solution add twenty drops of a saturated solution of alum in water, and add these to four drachms of a saturated solution of sal soda in water; shake well and filter, and float your paper from one minute to three, and if for immediate use, dry by artificial heat, and fume over strong ammonia ten to thirty minutes. When surface-dry, place between blotting-paper, previously prepared by drawing through a twenty-five grain solution of sal soda in water. When dry make into book-form, and place the

silvered paper between the leaves. Paper thus prepared will remain good for months, and when about to use, fume ten to thirty minutes. Print but a very little darker than you wish the finished print. Trim, wash in three changes of soft water, and tone in the following:—Soft water, thirty-two ounces, fine table-salt, one tablespoonful. In a graduate put one to two drachms of acid gold solution, and a small piece of blue litmus paper. Now add saturated solution of sal soda in water, drop by drop, till the litmus-paper remains blue, and add to the above toning solution. Now place a few prints in, face down; at first they will turn a bright cherry colour, and soon to a brown-sepia, or steel tint. Fix in hypo: strength one to ten of water, with a little salt. Turn the prints continually till thoroughly fixed, with the face down. Take directly from the hypo, and place in a strong solution of salt and water ten or fifteen minutes, and add fresh water, and handle the prints in several changes of water one-half to three-quarters of an hour; then pile the prints, one over the other, on a piece of glass, and press out the excess of water, and immediately mount.

By following the above plan, you will not be troubled with any blistered prints, and they will retain all their original lustre.

*Acid Gold Solution.*—Take four parts muriatic acid and two parts nitric acid; take gold coin and roll thin, or cut in small pieces. Place in a small glass flask, or an evaporating dish, over a sand-bath, and apply gentle heat. After adding a sufficient quantity of the prepared acid to cut the gold, then cool off, and add water (if you used a two and a-half dollar piece) twenty ounces. Filter and bottle for use.

#### ON THE CAUSE AND CURE OF BLISTERS IN ALBUMENIZED PAPER.

BY DR. J. SCHNAUSS.\*

THE introduction of the gold toning bath dates almost from the universal adoption of albumenized paper. At the same time a peculiar defect crept into the printing process, which attained its highest point with the employment of very brilliant albumenized paper—we mean the production of blisters in the albumen surface of a greater or lesser dimension, which only become visible in the toning bath or in the washing trough.

The opinions of those practical and learned in the matter, upon the appearance of this phenomenon and its cures, are as numerous as they are different, and we will here cite some of the most interesting views expressed, to show how they agree. M. Haugk says that blisters are produced upon papers albumenized in hot weather, and which are therefore too dry, for if a moist paper is albumenized it develops no blisters. In America they employ ether added to the silver bath to prevent the formation of blisters, while Dr. Liesegang recommended some time ago a prolonged floating upon the silver bath.

Upon the strength of the silver solution, photographers are not in accord: some recommend a weaker and others a stronger solution to prevent blistering. M. Carey Lea tells us to employ a weak soda bath between the operations of fixing and washing. Mr. Henderson seeks the cause of the defect in the strong sizing of the unprepared paper, the albumen being, in such a case, unable to penetrate into the material. He recommended the keeping of albumenized paper in a moist locality, and to employ a weaker silver bath. Mr. Dunmore advises dipping the albumenized paper, after sensitizing, in strong alcohol; while Mr. Spencer avows that if an acid toning bath is made use of, blisters need not be feared.

On the following points all are agreed: the blisters are to be found only on highly albumenized papers; nevertheless, the defect is not universal, for in a quire of paper only certain sheets exhibit the defect; moreover, sheets following one another, which may be presumed to be albumenized in order, often, as we have observed, show the defect.

Alkaline baths (as also ammonia fuming) favour the

\* *Philadelphia Photographer.*

\* *Photographisches Archiv.*



formation of blisters, a fact that may be explained by the solvent action of alkalis upon albumen.

All substances which coagulate albumen are capital remedies against blisters, as, for instance, alcohol and ether, and likewise heat. Nitrate of silver can scarcely be classed among these substances, as it only coagulates by combining with the albumen, forming albuminate of silver, which is insoluble in water. As we know, however, the nitrate only partially changes the albumen, for while the surface is rendered insoluble, the film underneath, next the paper, still retains its solubility, in which the cause of blistering may be sought. If an albumenized paper of this kind is floated for a few moments on the back, no blistering need then be feared. This method is, however, too costly a one in practice, for if this extra amount of silver solution is not actually lost, still it is at any rate absorbed from the bath. Moreover, this is a remedy of which the manufacturer of the paper cannot avail himself, any more than the coagulation of the film with alcohol, &c. We shall, however, at the end of this article specify a much more simple and certain remedy, which may be employed with advantage both by manufacturer and customer.

A perfectly analogous appearance may be observed in the Taupenot collodio-albumen process, for very often the albumen rises in blisters during the operation of fixing with concentrated soda solution, a strong fixing solution bringing out the defect in a much more marked degree than a dilute one.

On drying, the blisters always disappear—so completely indeed, that many photographers trouble themselves little in the matter; often, however, in the dark shadows, they leave behind grey spots or patches. Moreover, the lifting of the film affords convenient recesses for the soda solution, which accumulates there, and subsequently forms stains, as it cannot easily be displaced from those spots by subsequent washing.

As I was of opinion that the formation of blisters was due to a partial running off of the albumen film from the paper, the cause of which was possibly different, and at present unknown, I instituted the following control experiments on the subject:—

1. From a sheet of brilliant albumenized paper, which was proved to be inclined to blister, some small pieces were cut, of which a few were sensitized in the ordinary manner, except that the back was also floated on the solution for a few seconds. The result was that no blisters were formed (after fixing and washing), but, at the same time, many iron spots were apparent, and its sensitiveness impaired, as well as the tone of the pictures injured, there being some patches of a red tint which were difficult to tone.

It was quite immaterial whether the paper was exposed to light or not, the blisters appearing just as frequently upon the whites of the pictures as upon the printed portions, so that the effect of the light can have nothing to do with the formation of the blisters.

2. Other pieces from the same sheet of paper were coated on both sides with alcohol, dried, and sensitized. No blisters were produced; aqueous solutions were easily repelled by the albumen surface, as a proof of its complete coagulation. But light red spots were apparent in this instance also, a proof of unequal toning. In this case, too, the sensitiveness seemed diminished.

3. Other similar bits of paper coated with alcohol on the face only behaved in the same manner.

4. The same result was obtained with paper which, after sensitizing, was treated with alcohol on the back.

5. The same result was also obtained by the addition of alcohol or ether to the silver bath; these additions would doubtless influence both the keeping qualities and character of the silver bath.

All these remedies have the disadvantage that they cannot be employed by the manufacturer, but only by the consumer, which cannot be said of the method I am about to refer to, and which I have several times tested as to its efficiency.

I must here repeat that in the first plan it seemed to me

proven that the formation of blisters in the albumen film consisted in the unequal coagulation of the albumen; or, in other words, in the partial adhesion of it to the surface of the paper. If, as happens in many factories, the paper is, before being albumenized, coated with a solution of india-rubber and benzole, as a matter of course the blisters become more frequent, supposing the albumen is applied undiluted, and forms, therefore, a very thick and tough skin.

A perfect coagulation of the albumen is nevertheless in no way profitable, as this prevents the uniform absorption of the bath solution. If we take into consideration the favourable influence of moisture during the keeping of the paper, or just prior to its being sensitized, as a means of preventing blistering, we must come to the conclusion that the best plan is to bring the albumen into a more soluble state, not from the front, however, which would dissolve off if brought into contact with water, but from the back through the surface of the paper. In this way a perfectly firm adhesion of the albumen film to the paper is brought about. The manufacturers will be able to say better than I whether they moisten their paper or not before albumenizing; but when they do, further moistening of the film subsequently would be necessary. How far, too, a very dry or warm storage would necessitate moistening again on the back can only be decided by experience.

I must not also forget my observation that those albumenized papers which small very foul are less apt to blister. It is not impossible that by becoming rotten, so that several gases are disengaged, the albumen becomes more loosely attached to the paper. It is a well-known fact that many manufacturers purposely allow the albumen to become rotten before it is used, as it then becomes more fluid. At first I allowed the albumenized paper to float on water on its back until it had become flat, small pieces always rolling up very rigidly; but I found that the paper absorbed too much water, and for this reason I preferred to lay the sheets face downwards on clean blotting-paper, and to sponge the back with a very moist and perfectly clean sponge. Before being sensitized the paper must be again rendered pretty dry (being dried in the air, and not by artificial warmth), as otherwise the surface will be unequally moist, and red patches on the finished photograph will be the result.

That photographers are more or less troubled with blisters is due doubtless to the greater or less degree of moisture in the store where the albumenized paper is kept, as also upon the strength of the soda bath employed. Is there, for instance, any tendency in paper to become blistered, this is scarcely apparent in a weak soda bath, whereas long-continued immersion in a strong hyposulphite solution develops blisters in plenty. The first cause, viz., the changing amount of moisture in the atmosphere, may also influence the albumenized paper during manufacture. In the absence, however, of any definite knowledge as to the mode adopted in the manufacture of a paper, which no doubt differs in many establishments, the primary cause of the defect can scarcely be fixed.

If, before employing a fresh batch of albumenized paper, it is desired to discover which sheets will blister, and which will not develop the defect, it is well to cut some small strips off several of the sheets, and, having numbered them for identification and comparison, they should be tested. They are floated (not immersed, for this would have the effect of preventing blisters) upon the silver bath, and are then treated in the same baths exactly as if they were pictures, only a rather stronger hyposulphite bath should be employed than usual. When in this latter solution, or in the washing bath following, the paper may be examined for blisters. These manipulations may all be carried out in a very short space of time. Such an examination as this will show that in one and the same quire there are sheets that blister, and others which do not, while some sheets will be found liable to blister at one end and not at the other, the reason for this being, no doubt, that in drying, the albumen has run to one side, where a thicker film has been produced.



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## THE PHOTOGRAPHIC SOCIETY.

The Council of the Photographic Society, acting in accordance with a requisition forwarded to them, have appointed a special meeting of the members to consider certain amendments in the laws proposed by the requisitionists. In order to avoid the inconvenience which might arise to many members in being called upon to attend two business meetings within a few days of each other, the special meeting has been called for the same evening as the annual meeting, the precedence being given to the former, which will be held at half-past six in the evening, and the ordinary annual meeting at eight o'clock, as usual. The amended laws, v. and vii., proposed by the gentlemen signing the requisition, have for their intention, it will be seen, a more popular form of electing the officers of the society. It would be possible, we think, and with advantage, to make the operation of the rules wider and more representative still, and not only to give all the members more complete control over the elections, but to secure more frequent accessions of "fresh blood" into the council, and more extensive distribution of the duties and honours of office amongst the members. There are, moreover, other rules, besides v. and vii., which are clumsy in construction and obscure in meaning, the revision of which is desirable. The council, in the circular just issued, calling the meeting, instead of offering any amendment expressing antagonism to the wish of the requisitionists, simply suggest the formation of a committee, consisting chiefly of members of the society not connected with the council, for the purpose of revising the rules generally, and reporting to the society at large. By this means the wishes of the society regarding the election of officers may be met, and a code of rules secured which shall not be open, in construction or spirit, to the stigma which has been cast on those by which the society has been governed during the past twenty years.

## SECURING SHORT EXPOSURES.

In some recent observations on the subject of long and short exposures, we mentioned the fact that some portraitists recognized advantages in sittings sufficiently long to allow the features to acquire composure after the first few moments of nervous anxiety which in some cases follow the injunction to remain quiet. There can be no doubt, however, that every facility which enables the portraitist to reduce the duration of sitting at his pleasure must be regarded as a valuable accession of power. In the course of a recent conversation with Mr. J. R. Johnson, he was good enough to detail the results of various observations he had made during a recent visit to Paris and Marseilles, when various photographic novelties came under his attention.

In visiting the studio of M. Wallerie, at Marseilles, whose portraits were amongst the most perfectly lighted he had seen, he was filled with astonishment on entering the glass room. It was in construction, to use his own words, rather like an enlarged cucumber frame than an ordinary photographic studio, the roof was so low and nearly flat. When he witnessed a sitting, he was still more surprised at the extreme rapidity of the exposure, which, in mid-winter, occupied an insignificant number of seconds. The disadvantages of very lofty studios are familiar to most portraitists; but few have ventured on the experiment of making the roof so low that a tall man only just escaped striking it with his head. It is clear that, for many reasons, the nearer the sitter is to the glass the greater the amount of light he will receive, and the more intense that light. Not because, as we have heard the matter thoughtlessly argued, the sitter is nearer the source of light, because the glass roof is not the source of light; it merely represents the aperture through which the light passes, with such loss as it suffers from absorption by the glass. But the nearer the sitter is placed to the aperture through which light passes the greater must be the amount of light from the sky. The problem to be solved in building a glass house is to secure every ray of light which can possibly fall upon the sitter and light him effectively, and to exclude every ray which does not so light him from the studio altogether. If the sitter were placed in an open place, with the light of the sky reaching him from every direction, the opaque parts of the studio should consist of such walls or screens as would exclude all light falling on parts not required, securing the most brilliant illumination with the most effective gradation into shadow possible. If theoretic considerations only prevailed, it would seem that a high skylight, with side lights joining it, should be as effective as a low skylight. As a practical fact, varied experience has shown that a low skylight is, under any circumstances, most conducive to rapidity, and that it generally affords facilities for the most effective lighting. Our object here is not to discuss the question of glass houses generally, but simply to give renewed effect to the limit which our friend's observations has recalled to our attention.

We may remark, in passing, also, that the style of portrait in vogue in the studio in question, and also in Paris generally, is the enamelled cameo cabinet, described by Mr. B. J. Edwards in our YEAR-BOOK. It is certainly a most effective style of portraiture, the enamelled surface and convex cameo form harmonizing admirably with each other, giving an unusually fine effect of brilliancy and relief.

Another of the facilities for reducing exposure has been frequently brought under the attention of photographers, but has failed to secure general consideration. We refer to the accelerating influence of diffused light applied to the sensitive plate. We mention it again here simply to state the result of experiments which had come under the observation of Mr. Johnson when in Marseilles. Our readers have been made familiar, in the letters of M. Lacan, our French correspondent, with the name of M. Melchion, an experimentalist in this direction. In Marseilles Mr. Johnson visited M. Melchion, and was much struck with the unquestionable acceleration obtained by the aid of diffused light. The mode employed by M. Melchion, as our French correspondent has described, is very simple, and recognizes simply the influence of weak white light, discarding any notion of an occult action in coloured light. Before exposing the plate upon the sitter, he submits it for a few moments—two or three being generally sufficient—to light passing through a ground glass. This exposure is sufficient to initiate an action all over the plate where the illuminated image falls, but insufficient to produce reduction where no further light falls, so that no fog need result. If any trace of fog be found to follow, the exposure through ground glass has been too long, and must be reduced. It is precisely the same in principle



as the momentary exposure of the Daguerreotype plate to diffused light, which we have often described, and which twenty years ago we constantly practised. There is another noteworthy point in connection with this operation to which Mr. Johnson called our attention. The result of such exposure to diffused light is not a simple acceleration: it effects something more, especially where the sensitive film consists entirely or largely of bromide of silver. It renders the film sensitive to non-actinic rays, which, in an ordinary exposure, would have been totally without action upon it. Objects of vivid yellow, orange, or red, which in an ordinary exposure would have produced no action upon the plate, are found, after the plate has had this momentary exposure to weak diffused light, to act and produce images in their due gradation of light and shade precisely as objects of actinic colour. This, if it be found confirmed in general practice, is surely an advantage which cannot be overestimated.

The important point is to secure a satisfactory method of regulating the amount of white light, so as to secure sufficient to initiate action, and not enough to induce fog. M. Melehuon, as we have said, uses ground glass. His method having been tried and adopted in Paris by several of the most distinguished portraitists, some of them have used opal glass as more convenient. M. Lacan's letter, in our last, mentions some of the gentlemen who have adopted the principle, and describes the ingenious mode in which a disc of ground glass, or opal glass, in the cap of the lens, is made available in securing the brief action of diffused light. Our readers will remember the plan patented by Mr. Gage, a few years ago, of securing a similar end by exposing the plate in the camera for a few seconds to a piece of black cloth or velvet. An exposure to weak diffused light, strictly under control, appears to us better adapted to the end than the use of green or red glass in the camera; but whatever method be employed, we cannot but think that some of them are worthy of more attention than they have yet received, and, if anywhere, surely in the dull, murky light of an English winter.

#### DEFLUBE'S COMBINATION CAMERA.

A LANDSCAPE camera has recently been devised by M. Deflube, of Paris, capable of producing upon one plate a combined picture made up of different views. The camera, according to the inventor, not only allows one to pick out suitable objects here and there, such as may be desired to build up an effective picture, but also permits the photographer to produce a picture of large dimensions with a comparatively small lens.

The camera consists of three parts, of which the front carries the lens, and the back the focussing screen, while the middle portion contains a box, in which there are two slides; the one to move from the right, and the other from the left, both fitting in one and the same groove; and only that portion of the view is rendered visible on the focussing screen which it is desired to secure in the composition picture. These slides shut up perfectly, meeting together, but they are both of them as long as the breadth of the camera, so that any portion of the combination may be as small or as large as desired.

The three parts of the camera fit neatly together, so as to be easily formed into a single piece of apparatus. When one exposure has been made by opening one of the slides, the camera is taken to another spot, where another exposure takes place, the second slide being opened this time. To prevent any line showing where the pictures join, the box containing the slides is placed about 0.2 metres from the focussing screen and from the plate. In this way a half-shadow is produced on every opening of a slide, and the light is so diffused that no action whatever is afterwards visible upon the glass of any division between the combination pictures.

The apparatus is, of course, especially suited for employment with dry plates.

#### BLEACHED SHELLAC.

A METHOD for producing a good white lac appears in the *Hessian Commercial Journal*, which, although not altogether new, deserves to be quoted, because of the difficulty at present existing of getting a material of this description suitable for photographic purposes. That usually obtained in commerce is not of a permanent, unalterable nature, and, moreover, it is, as a rule, of a very brittle character. If chlorine have been used in the bleaching process, and the product contain merely a trace of this element, the same may act injuriously upon any metal with which it comes into contact. So uncertain, indeed, is the nature of bleached lac, that many photographers prefer to employ the native material rather than run the risk of having a treacherous film.

The film we have above referred to ensures, at any rate, a bleached lac which is free from chlorine, and does not partake, to any extent, of mechanical infirmity. The lac to be operated on is, in the first place, dissolved in strong spirits of wine, and to the solution is then added bone dust in sufficient quantity to make a thin paste, the bone dust, by the way, being finely ground. This mixture is allowed to stand for the space of several days, exposed during the time to the full action of direct sunlight; it is shaken up repeatedly during the period, so that every particle is brought into motion. When the shellac solution appears to be bleached sufficiently to suit the requirements of the operator, then the liquid portion is filtered off through an ordinary paper filter, and allowed to run into a bottle or other utensil.

If one filtration is not sufficient to obtain a clear liquid, then the solution is passed through a second time, but this is seldom necessary. Photographers who prepare their bleached lac in this way may be much more confident of its properties than they can of any commercial sample.

#### GELATINO-BROMIDE OF SILVER.

A CORRESPONDENT who signs himself "A Deaf and Dumb Artist"—a signature which excites sympathy for the difficulties under which he labours in experimental work—calls our attention to the fact that in 1866 he communicated with us regarding some experiments with gelatino-emulsions of iodide and bromide of silver, and, at a later date, with similar emulsions of chloride of silver. He now subscribes the following formulæ for the benefit of our readers:—

##### "GELATINO-BROMIDE OF SILVER PROCESS.—"Take—

Bromide of potassium	...	3 or 4 grains
Bromide of cadmium	...	6 "

Soak three or four grains of gelatine in one ounce of water and dissolve by heat, and mix the above salts with half of the gelatine solution. And then mix nitrate of silver twenty grains with the remaining half of gelatine solution. Drop a drop of the nitrate into the bromide solution at a time, and shake well every time a drop is added. The plate is then dried, washed, and coated with any preservative. When dry, fumed and developed. Gelatino-iron developer, or any developer will do.

Iron	...	...	...	20
Acid	...	...	...	15
Alum	...	...	...	quant. suf.
Sugar	...	...	...	1 drachm
Water	...	...	...	1 ounce

"GELATINO IODIDE OF SILVER.—"Prepare exactly as above, but use iodide instead of bromide.

"The washing is not used as in the bromide process, and no preservative is used.

##### "Developer for the above (any developer will do):—

Pyro	...	...	...	3 grains
Treacle	...	...	...	$\frac{1}{2}$ drachm
Alum	...	...	...	quant. suff.
Water	...	...	...	1 ounce

Fix as usual.

### DR. MONCKHOVEN ON COLLODION LANDSCAPES.

IN a recent number of the Italian photographic journal, the *Rivista Fotografica*, appears an article upon the collodion best suited for landscape photography, from the pen of Dr. D. Van Monckhoven. The writer states that hitherto it has been believed that bromide of silver was more sensitive to the green rays, such as predominate in landscape, than the iodide compounds of that metal. This idea, as the experiments of M. Rutherford, when photographing the solar spectrum, sufficiently prove, is erroneous. The two salts are both equally sensitive, only iodide of silver solarises with much greater facility, and it is upon this circumstance that Dr. Van Monckhoven bases his new plan of operating.

By doubling, and even tripling, the period of exposure, it is possible to obtain every detail in masses of foliage reproduced by means of the camera, if one works with a collodion which has been sensitized with iodide salts alone. While the detail is being secured, those portions of the object which reflect a bright light are solarised in the picture, and thus they are no longer represented on the cliché as opaque blacks, such as is usually the case in landscape pictures. In this way a negative is secured with contrasts of a far less violent nature, and with the help of a suitable intensifying solution sufficient vigour may be obtained, subsequently capable of yielding upon paper a brilliant print, with a great deal of detail in the foliage.

M. Van Monckhoven recommends, therefore, all landscape photographers who are not required to produce pictures by instantaneous or rapid exposures, to employ nothing but simple iodised collodion, and, by allowing long periods of exposure, thus to secure less violent contrast, and more half tone and detail in masses of foliage and the like.

### Critical Notices.

**THE SHUTTLECOCK PAPERS.** A Book for an Idle Hour. By J. ASHBY STERRY. (London: TINSLEY BROTHERS.)

THE notice of a volume of charming essays amid the hard facts of photographic processes and formulæ will probably startle some of our readers as much as a sudden gleam of sunlight finding its way into the dingy recesses of the dark room; and the bare supposition that he could by possibility have an idle hour for which his favourite art could not find ample employment may be regarded by the perverid photographer as an affront. Besides luring him to spend some idle hours pleasantly, Mr. Ashby Sterry has another claim upon the photographer, as he assumes, in some sort, kindred with him in producing "sun pictures," and challenges Mr. Valentine Blanchard and others of the photographic fraternity to try conclusions with him. His pictures are produced without a camera, and he is unencumbered, in his sketching rambles, with dry plate or dark tent; groups, landscapes, or single figures are secured by an instantaneous process, and in permanent tints, by the aid of a crow-quill pen, or something as delicate in its touch. Quaint and picturesque, full of delicate humour and playful philosophy; characterized by a keen perception of beauty and fun, and hearty relish alike for each; these essays are in every way delightful. We were about to recommend them not simply for individual reading, but as a capital volume for the photographer's reception room, when we remembered that it might be inexpedient to give sitters an inducement for lingering there. In any case we commend to our readers a very charming volume.

**THE SILVER SUNBEAM:** By J. TOWLER, M.D. Eighth Edition. (London: TRUBNER and Co.)

PROFESSOR TOWLER's very excellent and comprehensive manual has passed through many editions, and has been augmented extensively and curiously since it left his hands,

we imagine. The body of the work remains the same, but each edition contains an appendix giving fresh matter. The appendix, the addition of which constitutes the seventh edition, consists, for instance, of a number of articles transferred from one of our YEAR-BOOKS, and although their source is not acknowledged, they undoubtedly add to the value of the work. The appendix to the eighth edition is more extensive, and consists chiefly in the description of some useful apparatus and details of some recent formula.

**PHOTOGRAPHIC MOSAICS for 1874.** Edited by E. L. WILSON, Philadelphia. (London: PIPER and CARTER.)

MR. WILSON's little annual is as full of capital practical papers as ever. Almost every distinguished photographer in the States seems to have made it a point of honour or ambition to contribute some details of experience to the general treasure, and the result is the very capital volume before us.

**THE MIRROR: A Weekly Magazine of Literature, the Drama, Science, and Art.** (London: JAMES HENDERSON.)

A NEW weekly magazine, in which science and art, as well as general literature, play a prominent part, might, under any circumstances, be very fitly brought under the attention of photographers; but the issue of a magazine possessing such unprecedented claims to attention as the *Illustrated Mirror* ought to be brought under the eyes of everybody who can read. It is, having regard to excellence, size, and price, probably the cheapest magazine ever issued. Its literary claims are of the highest class; its contributors men in the first rank; whilst in size and price it competes with the cheapest of its class. Amongst its contributors are George Augustus Sala, William Black, Charles Gibbon, William Sawyer, Tom Hood, E. L. Blanchard, J. O. Halliwell, J. Crawford Wilson, Tom Arher, Ashby Sterry, Dr. Carpenter, Dr. Chalmers, and a host of equally good men; and it is illustrated by John Proctor. Its contents present something for everybody, ranging from "grave to gay, from lively to severe," and admirably combining the qualities of a first-class literary journal with a magazine for general family reading. Photography receives frequent notice. Here is a paragraph we quote from the notes of passing events:—

One of the most popular recent applications of photography has been made in Paris. It consists in the issue of a first-class photograph with every number of a newspaper. The journal is entitled the *Paris Theatre*. The photograph is generally the portrait of an actor or actress. The photograph is of excellent quality printed by the Woodbury process, and consists in a portrait, the usual price of which would be about two shillings. The price of the journal in question, and photograph, is twenty centimes, or twopence.

**THE YEAR-BOOK OF PHOTOGRAPHY for 1874.**

Edited by G. WHARTON SIMPSON, M.A., F.S.A. (London: PIPER and CARTER.)

WE can only call attention to the fact that this YEAR-BOOK is issued; that it is larger than ever; and contains a larger number than ever of contributions from photographers, including almost every name of distinction connected with the art.

### PRACTICAL NOTES.

BY PROFESSOR HERMAN VOGEL.

**WASHING PRINTS—ALCOHOL IN SILVER BATHS—FOGGING BY ETHER—SPLITTING OF THE COLLODION FILM.**

*Washing Prints.*—The washing of freshly-printed albumenized pictures before toning is often termed "chlorizing." How on earth photographers came to adopt this name, goodness only knows. Many people believe, owing to



the term, that the pictures must in some way be treated with chlorine in the operation. This, of course, is a very silly blunder, over which some have worried themselves needlessly. I have repeatedly received letters from photographers in Silesia to the effect that their mountain water would under no circumstances "chlorize" their prints. They dipped their pictures into it, but the water remained perfectly clear, and therefore they believed the latter to be useless, and employed instead spring water containing chlorine, which had to be brought from an unheard-of distance. One correspondent told me that he had in vain bored for water which should be competent to "chlorize" his pictures; while another operator I know will not depend upon the water laid on in his house for washing his pictures, but has a supply of spring water carried up four pairs of stairs for the purpose. The most singular instance of the kind I know is that of a most fashionable photographer who endeavoured to add chlorine to his water supply by throwing into it a handful of common salt, the result being that his batch of prints became of a foxy red, and had to be thrown away.

To satisfy such brethren as these, I would point out what they should long ago have been acquainted with, viz., the washing of silver prints before toning is simply for the purpose of removing from them any free nitrate of silver still attaching to the surface of the paper. The water employed for this purpose need contain no chlorine at all, pure distilled water being quite as suitable, if not actually more so, than that which contains chlorine. If, during the operation of washing, the water becomes turbid or milky, chloride of silver being formed, this is due to the water containing by chance chloride of calcium or carbonate of lime, which is very frequently to be found in spring water. River water and mountain water contain less of these bodies, and are sometimes quite free from them; and in such cases the water remains quite clear after washing the prints; it is this circumstance, doubtless, that has misled many an operator, who, seeing no action, supposed that none had taken place. Many defend the employment of a water containing chlorine by stating that by means of the same the last trace of nitrate of silver is converted into chloride of silver; such is, however, by no means the case, for, according to Mr. Abney's experiments, a trace of free nitrate of silver is necessary in toning with the well-known chloride of lime baths. I am in the habit of dipping my prints four times into river water (which in Berlin contains very little chlorine), and then to tone them. Photographers who live in mountainous districts, and for years employ no water containing chlorine, will bear me out when I say that for washing purposes a chlorine water is in no way necessary.

*Alcohol in the Silver Bath.*—It is well known that with every collodion plate some alcohol and ether enters the dipping bath. The fact is that it compels us to make the developer more rich in alcohol, so that it may flow evenly over the sensitized plate. A thrifty photographer of my acquaintance, who is exceedingly economical in the matter of alcohol, is in the habit of pouring his silver bath, every afternoon, into a large saucer, and allowing to stand over night. The alcohol which has become added to the bath during the daytime is in this way evaporated, and there is no necessity then of adding any alcohol to the developer at all.

*Fogging by Ether.*—Fogging of the negative may be caused through many different causes, such as lack of acid in the dipping bath, stray light, alkaline collodion, organic substances, nitrite of silver, &c.; and recently I have observed that it may be due to ether. A supply of the latter had been obtained from an apothecary, and appeared to contain nothing of a suspicious character. The collodion prepared by it was found liable to fog, and the photographer attributed the defect to everything but the ether, and he endeavoured, by adding acid to the bath, iodising

salt to the collodion, &c., to get rid of the distressing phenomenon. The worst of it was, that in one bath in which the photographs were sensitized, others prepared with faultless collodion also showed signs of fogging. After every chemical employed in the process had been carefully tested, it was at last decided that the ether was at fault. On smelling the same, it was found to be mixed with some impurity, and upon another sample being employed for dissolving the pyroxiline, the defect disappeared. I may here add, that I have often remarked fogging with collodion prepared from precipitated pyroxiline when the normal collodion has not been completely separated, after it has been precipitated by the addition of water. In this case the defect cannot be removed, and the collodion must be thrown away.

*Splitting of the Collodion Film.*—The splitting of the collodion film has often given rise to discussion, and, till now, photographers have sought in vain for a means of preventing the same. In many studios such a thing is never to be heard of; as, for instance, in that of Messrs. Loescher and Petsch, of Berlin; while in others, again, costly negatives have been irredeemably spoilt despite the greatest care in storing the plates. In America, splitting of the film is quite unknown, and photographers over there maintain that the defect is due to the varnish, which is certainly, for the most part, better in America than Europe. The varnish is not, however, altogether at fault. Three years ago I brought back from America some excellent varnish, which I made use of; now I find in some of my films a tendency to split. M. Schuler's advice, which he gave some four years ago, is to coat the negative before varnishing with a solution of yellow (not white) dextrine, made up of one part dextrine and ten parts of water. If this were done, he maintained, no negative would split. M. Prumm, who has adopted this advice, has been most successful with his negatives, but the plan does not answer always, as a recent instance proves. One of the large printing establishments in Berlin changed its locality and moved with several thousand of negatives into new quarters. The walls were not quite dry, and, although all the negatives had been treated with dextrine, splitting of the film broke out like an epidemic throughout the series of plates. Dextrine alone, therefore, aids nothing; dry storage is also imperative, and that is the reason why splitting of the film is so rarely met with in America, where the atmosphere is much drier than it is in Europe.

## Correspondence.

### DISAFFECTION IN THE LONDON PHOTOGRAPHIC SOCIETY.

DEAR SIR,—I am obliged by the insertion of my letter in your last issue, and, with your kind permission, will add a few more words. I am anxious to do so (with no intentional discourtesy to the council) through your widely circulating journal, rather than (as you suggest I might) make my propositions direct to the Society. I do so, firstly, because that through your columns I reach every member of the Society; and, secondly, because I am anxious to do so at once, as I think that all suggestions having for their object any alteration of the Society's laws had much better be deliberately read and pondered by gentlemen in their own homes, rather than that they should hear them for the first time at the meeting called to (perhaps excitedly) discuss them.

I am sorry—very sorry—to see that this discussion is engendering personal, bitter feeling. Whether Mr. Stillman has cause for his complaint of discourtesy and coolness, one cannot gather from the Society's official report of the proceedings; but we all know that "actions speak louder than words." It is quite possible to offend in manner, while the sentences which drop from the lips are unexceptionable, and this gives point to a paragraph in your leader of the 16th inst., that "a society might be saddled with the permanent burden of an incompetent or disagreeable man." In my opinion, sir, such a possibility ought not to exist. The president, vice-presidents, with all other officers, ought to be periodically elected.



I am glad that, in your foot-note to my letter, you approve of giving the right of voting to country members. I will not dispute with you the non-conservatism of the council, and am glad to hear that it is at all times ready to receive suggestions from outsiders.

I must, however, join issue with you when you say that, "in proposing rotation as the sole rule of retirement, the Society would at times lose efficient and earnest officers, and retain many who, perhaps, never attend a single meeting of the council." But, sir, this supposed disadvantage is most completely met by Law 5, which says of those whose term of office has expired, that "all or any of whom shall, however, be eligible for re-election." By that "saving" clause *not one* efficient and earnest officer need be lost to the Society, for the bulk of the members want just such men to conduct their affairs, and, as I said before, are *sure* to re-elect them.

As to regularity of attendance, there ought to be a rule by which such attendance should be made known to the members, and that fact alone would have its influence on any laxity in this respect.

Let me repeat that I think the council (as such) ought not to initiate any election list, or take *any* steps which even *looks* like an attempt to consolidate their *own* power, or lengthen out their *own* tenure of office. In this, sir, they ought to "avoid the very appearance of evil."

Your last paragraph, where you say, "Facilities of the widest kind, and free from all taint of invidiousness, should exist for members electing new councillors," I endorse most emphatically, and, holding that opinion, I cannot see how you can consistently advocate the initiating of an election ticket by the council, for the very "event of any member proposing other names than those proposed by the council" *must*, in its very nature, be an *opposition* to the council, proclaims dissatisfaction with the council's ticket, would be looked upon as "invidious," fosters the spirit of party and eliquism, and must result in heartburnings and bitterness. If, on the other hand, there is but *one* list, and that list made only by the members, it must be free from all taint of invidiousness, and has nothing of an *official* character; it is simply and purely the "members'" ticket, and the members of the *council*, as members of the *Society*, could nominate any retiring members whom they wanted to re-elect, and could vote for them; but in their *official* capacity they should have nothing to do with it; if they do, they cannot escape the charge of partiality. Rule 7 is full of it.

It is a singular omission in the laws that no provision is made for the termination of the office of president or the secretary. I hope that, as well as other things, will receive the attention of the Society at the forthcoming general meeting.

Let me conclude by expressing a hope that at the coming meeting all personal feeling will be dismissed, that gentlemen will not be accused of "quibbling" on the one hand, or of "rudeness" on the other, that none—whether president, council, or requisitionists—will attempt to domineer, show partizanship, or a disposition to fight to the bitter end; but that *all* will go there with a determination to disregard any petty and unworthy annoyances to which they may haply be subjected, and, losing *themselves* in the far nobler aim of the good of the Society at large, and the highest interest of photography the world over, separate with the conviction that goodwill to each other (temporarily displaced) has a firmer grip and a closer hold than ever.—I am, dear sir, yours truly,

F. HUDSON.

Ventnor, Isle of Wight, January 26th.

#### GLYCERINE IN COLLODION.

DEAR SIR,—I often have to take large plates a distance from home, expose, and bring back to develop, and have always been more or less troubled with drying films. A few days ago, on one of these occasions, I added glycerine to the collodion, six drops to the ounce, and had no trouble. The plates kept perfectly, and worked throughout better than any I had ever used under similar circumstances.—Yours respectfully,

HENRY DIXON.

112, Albany Street, N.W.

#### THE PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

SIR,—On behalf of the committee of management, may I ask for space to acquaint photographers, both amateur and professional, that the Photographers' Benevolent Association is now established on a firm footing, the rules have been drawn up, approved by the Registrar, printed, and registered according to Act of Parliament, so that it has fairly commenced its legal existence. Some few of

the officers have been chosen, subject to the approval of the members at a general meeting to be now called for the purpose of electing officers to serve for this year. It is therefore necessary that all who wish to join and take part in the election should send in their names to the secretary, Mr. Wilkinson, 14, South Street, Bromley, Kent, as soon as possible. I may mention that the Rev. F. F. Statham, M.A., F.G.S., &c., has kindly consented to act as one of the vice-presidents, and Col. Stuart Wortley, and Captain Abney, R.E., have accepted the position of trustees, and that letters of kindly sympathy with the objects of the Association, with offers of a more solid support in the shape of donations and subscriptions, have been received from all the leading firms in London, and also from many well-known names among amateur photographers. It now remains for the assistants to take up the matter in the same spirit, and then we may hope to see the Photographers' Benevolent Association take rank among the foremost of similar associations in other professions. The amount of the subscription has been purposely made low, to allow all classes of assistants to take advantage of its help in case of need. The committee also invite amateurs, as they love the art they practise for amusement, to assist in helping those who have to practise it for daily bread, by donation or subscription. Mr. Wilkinson will be most happy to answer any enquiries, and donations and subscriptions will be received by the London and County Bank, Bromley Branch.

The necessity for such an organization has been acknowledged. The few earnest men (mostly assistants) who have by the expenditure of time and money brought the crude scheme to such a successful issue, now invite the cordial co-operation of all photographers to place this association in the position it ought to occupy as the Benevolent Association of a profession of such importance as photography.—I am, dear sir, yours truly,

GEORGE CROUGHTON, Chairman of Committee.

10, Ashchurch Grove, Shepherd's Bush, W.

#### PHOTOGRAPHIC SOCIETY FOR DUBLIN.

SIR,—Would you permit me, as a reader of your invaluable and influential journal, to suggest the promotion of a photographic society in our city. The want is so intensely felt by both old and young in the art that our winter months will be tedious beyond description. In Dublin, where there are so many men of such high repute, and well classified students in photographic art, the benefits derived by interchange of ideas, and the source of information to be acquired by old and young, at these convivial meetings, it is needless to enter into detailed comments upon. I feel convinced that those dark room manipulators we so highly eulogise, such as Messrs. Millard and Robinson, Simonton, Lauder, Lawrence, and a host of others (too numerous to occupy your space with) would all assist in the promotion of such an institution. I trust that you, Mr. Editor, will aid me in giving publicity to this. Our city, compared with others, produces an equal number of masters in the progressing art of photography. They fully credit that its progress may be attributed to such societies—that such societies brought it from its infancy to its teens. "And still we are not happy." I trust that my English brethren will acquit me from advocating a subject so strongly on the *tapis* (I mean home rule) by endeavouring to obtain a furtherance of internal management in photographic affairs, being assured that such a society would meet with satisfactory support from professional and amateur.—I remain, sir, trusting that this may be suggestive of starting one, and apologising for trespassing on your space, so freely given for the promotion of photographic intelligence and art studies, respectfully yours,

JAS. BRISCOE GILBERT.

26, Capel Street, Dublin, Dec. 18, 1873.

[We give insertion to the suggestion of our correspondent with pleasure, and shall be glad to learn that some steps have been taken to give them effect. We shall have pleasure in aiding in any way which we can.—Ed.]

#### BLISTERS IN ALBUMENIZED PAPER.—ALBUMENIZED GLASS.

DEAR SIR,—On turning over the past year's numbers of your paper, I find several notices of blistering of albumenized paper. Many causes and remedies are suggested, but I do not find that any one has thought of the variation in temperature, between the different baths and the waters for washing before and after fixing, as a possible cause; I fancy the hyposulphite of soda fixing bath is usually much colder than either the toning bath or the washing waters.

A useful brush for albumenizing glass plates, or for any purposes



to which a Buckle's brush may be applied, can be made out of a strip of glass, one inch to four inches or more wide, and a piece of sponge (fine), cut partly through, into which a portion of the glass strip is inserted, and secured by an elastic band; there are no fibres to come out, and the brush is easily kept clean. J. C. S.

[Our correspondent forwards us an example of the ingenious little brush he suggests. It is excellent.—Ed.]

#### DIRECT PICTURES VERSUS ENLARGEMENTS.

DEAR SIR,—I should like, with your permission, to add to the observations I made at the South London Society, on the size of the large direct heads at the Crawshaw Competition. That eight inches is much about the average of the human face, taken from the bottom of the chin to the parting of the hair, is beyond question. I measured several male faces, but none of them came quite up to that standard, while others were much below it. Much was lately said in praise of two life-sized heads by Mr. Neilson; and you, sir, expressed a regret that they had not been sent to compete. It would, however, have been useless, as the faces were only seven inches in length. With regard to the ladies, I found they were simply out of the question, if I would adhere to the actual size of nature. I measured three or four, and found the length of the face varied from six inches to seven and a quarter inches. This decided me, and although I had purposed competing for the larger size heads, after a few trials I determined to go in for the five inches focus only.

It is not at all likely that I shall have the time, even if I had the inclination, to compete again for either of the prizes. I do not, therefore, write from any motive of self-interest, but rather to clear the path of my photographic brethren at the next exhibition; and also from a belief that much more may be accomplished in the way of large direct pictures than has yet been done. I cannot suppose that Mr. Crawshaw really prefers quantity to quality: still less do I believe that he would willingly do anything to bring discredit upon that style of portrait photography with which his own name is so worthily associated; yet what, I ask, has been the result of the competition? The enlargers have certainly carried off all the credit of display. The larger-than-life-size heads (as I must persist in calling them) have been spoken of in very disrespectful terms: the features were commonly said to be distorted—the noses, especially, too large and too broad—and even the word *monstrosities* was freely applied to the pictures. At the last meeting of the South London Society, also, upon the question of “direct pictures *versus* enlargements,” the direct pictures were, as you truly observe, simply “left out in the cold.” To me this does not appear to be altogether just.

I need scarcely say that I have no prejudice against the enlarging processes. Some of the heads of Mr. Edwards at the Exhibition were very fine (although I still think much of the effect due to retouching) and the two large portrait subjects of the Autotype Company were really splendid. I believe, however, that up to a certain point the large direct pictures have a quality not to be found in any enlargement. Take, for example, the smaller heads of Mr. Crawshaw, or the pictures of Slingsby, Blanchard, or Robinson: I have yet seen nothing at all resembling them produced by any method of enlarging. I believe that the future progress of photography depends far more upon the right and ready use of the larger lenses than upon any number of carte negatives, however easy it may be to take or to enlarge them.

“Mais revenons nous a nos moutons.” I quite admit that it is possible (although troublesome) to find male heads of the required size; but how about the ladies? To furnish an exhibition of this sort with the fairer half of it left out would simply be to re-introduce the old joke of the play of Hamlet with the character of Hamlet left out by special desire. If we are to introduce only those who have faces eight inches long, I fear we shall have to go to Patagonia for models. As I have said, according to the standard proportion, as derived from the finest Greek sculpture, and universally acknowledged by the moderns, a face of eight inches supposes a figure of six feet eight inches. I will not quote Burke, who, in his essay, lays it down as an axiom that the beautiful is always inclined to littleness; nor further refer to Sir Joshua Reynolds, who seems, in some of his loveliest heads, to have acted upon that idea of his friend. I will simply mention, as an illustration of my argument, the Venus de Medici, the finest complete female figure left us by the Greeks: this is about five feet two and a-half inches in height, and consequently has a face but little over six inches in length.

I will here mention the plan I adopt for ascertaining the precise length or proportions of the features—a plan I have found

of great use in painting life-size portraits. Place a strip of card-board perpendicularly against the face; with a pencil mark the distance from the bottom of the chin to the parting of the hair, and, if necessary, the places of the features; hold this against the ground-glass of the camera, and it will then be impossible to depart from the true size of nature without knowing it.

Under all the circumstances, I think we may fairly appeal to Mr. Crawshaw to reduce the size for male heads to seven inches, for female to six and a-half inches: or, better still, to reduce the standard generally to the latter size, and leave any competitor who may find it desirable to make the heads as much larger as may be convenient to him. I believe the result would be that the heads in next year's Exhibition would be of a finer quality, and also of a much more pleasing character, than the last.—Yours respectfully,

R. W. ALDRIDGE.

#### Proceedings of Societies.

##### MANCHESTER PHOTOGRAPHIC SOCIETY.

The monthly meeting was held at the Memorial Hall on Thursday evening, the 8th instant, Mr. W. T. MABLEY, President, in the chair.

The routine business being disposed of, Mr. G. H. Wharton was elected a member of the Society.

Mr. A. BROTHERS, F.R.A.S., then communicated some particulars on the fading of silver prints (see page 49). He commenced by reading some extracts from articles which had recently appeared on the fugitive character of photographs, and expressed his belief that such articles were very damaging in their tendency. He then exhibited a number of silver prints, most of them taken from the “Pencil of Nature.” The first shown was more like a sheet of dirty yellow paper than a photograph, and some of those shown subsequently were very little better. In every instance the fading had taken place in that portion of the print which had been pasted or otherwise attached to the mount. One print shown by Mr. Brothers had been produced by himself for a special purpose some fifteen years since, and although it had been hastily done, and had not even been washed after the hypo bath, it retained its original colour and freshness.

A short discussion followed, in which

Mr. PETTY testified to the inferiority of modern white paper for retaining its colour. He said good white papers in times past were made from picked white rags, while in the present day bleaching processes were much resorted to on materials less carefully selected.

Mr. JOHN HOLDING said it was difficult, almost to impossibility, to procure either drawing-papers or colours that were sufficiently permanent.

Mr. ATHERTON said years of experience had satisfied him that freshly-made starch was the best medium for mounting purposes.

The SECRETARY said the objections urged against ordinary paper and mounting boards ought not to apply to photographic paper if all the care ascribed to its manufacture had been exercised.

The PRESIDENT agreed with Mr. Brothers to some extent, but did not consider silver prints by any means permanent, in consequence of the great affinity silver was known to have for sulphur.

A MEMBER suggested that the gold toning of silver prints would tend to their stability.

The PRESIDENT said no doubt it would, to some unknown extent.

Mr. NOTON read an Appendix to his paper on Limes (see page 51). He exhibited a much better light than that obtained at the December meeting. This was in some measure due to the greater pressure of gas in the mains.

The pressure of coal gas at half-past five o'clock was twelve-tenths of an inch of a vertical column of water; at six p.m. it had increased to more than thirteen-tenths. Some oxygen was obtained from Mr. Noton's apparatus, and a trial made. The light was very poor, and the gases exploded and put out the light several times—the large bore jet being used. At seven o'clock the pressure had increased to twenty-tenths or two inches, and all went well, a good light being produced, showing the pictures well on the screen. The blowpipe was afterwards taken out of the lantern to show the naked light, and the great facility there was for removing, replacing, or substituting another lime, even without extinguishing the flame of the blowpipe. A cylinder composed of magnesia alone was tried; the light, however, was not equal to that of the lime and magnesia.

The meeting, which was a full one, passed a vote of thanks to Messrs. Brothers and Noton, and was then adjourned.



## Talk in the Studio.

**PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.**—We have received a copy of the Rules of this Association, which have been duly registered in accordance with the Friendly Societies' Act. It is matter of congratulation to those who have long and earnestly worked in connection with this idea, to find it assume the form of an established fact. We hope shortly to notice the rules further.

**PHOTOGRAPHY AND THE TICHERGNE CASE.**—It will be satisfactory to photographers to note that the discredit of what has been termed the "garbled photographs of the grotto" is not laid by the prosecuting council to the charge of the photographer. Mr. Hawkins, in a fierce onslaught upon Mr. Onslow, remarked, in his concluding speech:—"We see now why he did not deem it inconsistent with, and derogatory to, the character of an English gentleman to procure false and garbled photographs of the grotto. I do not make any charge against the photographer, but I accuse Mr. Onslow of getting the views taken from a point that would not give you a fair representation of the grotto, and I accuse him of doing that with the deliberate intention of misleading you. And I say shame upon him for it. Henceforth let his name always be associated with the grotto. Let him have those two photographs: he has bought them and paid for them. Let him keep them, and hang them on the walls of his ancestral home, and let them go down to generation after generation as heirlooms of the family of Mr. Guilford Onslow."

**BEAR-HUNTING AND PHOTOGRAPHY.**—In an account of bear-hunting within the Arctic Circle, the *Lamp*, after describing the manner in which the retreat of a bear with her two cubs was cut off by the steamer, continues:—"At this moment the photographers, rushing on deck, demanded the right of 'first shot.' Quick as a flash the camera was down and focussed, and the family group of bears was taken at a distance of about two hundred yards. The camera was stationed upon the top-gallant-forecastle, and the impression was obtained while both bears and ship were in motion!"

## To Correspondents.

**GUM.**—The practice of applying a solution of gum to a negative whilst wet to secure a surface for retouching, and subsequently varnishing, was much practised a few years ago, but was given up by the majority of portraitists on account of various disadvantages which were found to arise in practice. Gum, being very absorbent of moisture, was found to absorb damp in spite of the varnish, and frequently to cause cracking. Dextrine was found to be a good substitute for gum, and to involve much less risk. The use of a thick solution of gum—such as you describe—is necessarily dangerous. Any solution of the kind should be used as dilute as possible; but the application of such substances to a negative, in order to obtain a retouching surface, has been superseded by better methods, involving less trouble and risk. The use of a retouching varnish, or the mode of making portions of an ordinary varnished surface suitable for retouching, either by application of a little turpentine or rubbing with powdered resin, or by other methods we have described, and touching upon the varnished negative, is now almost universally adopted, and is found to be less trouble, as well as safer.

**C. W. V. A.**—Plain paper may be waxed by immersion in melted white wax. A flat dish is used, and the wax being melted in it the sheets of paper are immersed, and subsequently placed between sheets of blotting-paper and submitted to the pressure of a hot iron. Many samples of paper are better for being previously soaked in warm water, to remove a portion of the sizing matter.

**CONSTANT READER.**—Nothing is better than the acetate bath for giving warm, rich tones. Take one grain of chloride of gold, thirty grains of acetate of soda, and six ounces of water. Use a day or two after mixing. Fix with four ounces of hypo in a pint of water.

**FRANK.**—Your description of fine lines running to the corner of the plate in which the collodion was poured off is a little indefinite. Are the lines of an irregular crapy character? If so, it is the fault of the collodion, which contains too much water—that is, the ether and alcohol employed is insufficiently rectified. The defect is known as "crappiness" in the collodion, and there is no remedy. You may, however, to some extent, modify the defect by allowing the collodion to set well before immersion in the bath.

**A LEARNER.**—The portrait lens in question may be used for landscapes, using a small stop. A view lens, as commonly understood, is a single lens of the form of that which constitutes the front lens of a portrait combination. If you unscrew the front lens of the portrait combination, and screw it in the place of the back lens, turning that which was the back to the front, you will have an ordinary view lens. 2. The above background will answer well for a small room, and will permit you to dispense with blinds.

**ARTIST.**—We have worked on carbon prints with crayon after first applying a coating of "Newman's Preparation," which gives a dull surface, presenting a tooth to the crayon, without in any way interfering with the beauty of the print.

**J. C. S.**—So far as we know, nothing further was done, a sufficient number of subscribers not having come forward. At present the gentleman referred to is out of England. We do not think that either absolute certainty or good keeping qualities will be obtained with any process similar to the albuminate of silver process, in which a combination of an organic substance like albumen and nitrate of silver are present. One of the most certain processes is the ordinary collodio-albumen, and its keeping properties are placed beyond doubt when a final wash of gallic acid is applied. Probably M. Constant's new process will be found to combine all that is required. Liquid ammonia may be used in alkaline development, but Col. Wortley recommends carbonate of ammonia in the proportions we have before published. Liquid ammonia may be used, but it is an experimental matter, rendered more possible by Colonel Wortley's recent discovery.

**R. F. M.**—The photo-relief process is now free from patent restriction, the patent having expired; but it possesses the still higher protection of requiring the original patentee's skill and experience to its successful working. We have no doubt that, for a suitable consideration, he would impart all necessary information; but you must bear in mind that the experience of many years in working out a special process is an important capital, the equivalent of money.

**SUNDAY TRADING.**—A "Poor Photographer" writes to protest against the imputation he thinks contained in Mr. Tunny's allusion to Sunday labour amongst photographers, and asks if it apply to Scotland only. In this country he thinks that Sunday labour is chiefly confined to the class who work at a low rate, and whom he ranks with dealers in sweetstuff and penny cignars. On the whole, he believes that all respectable photographers regard the day of rest with due respect. We summarise our correspondent's letter, but we cannot open our columns to a discussion of the question of Sunday labour.

**ANTOINETTE and JUNANITA.**—Photography in Malta will doubtless be characterized to a considerable extent by similar conditions to those which prevail in warm climates generally. 2. We cannot say certainly that any commercial dry plates will keep four months between exposure and development; we doubt it. 3. Portraits can be taken on Liverpool plates in a good light. We have taken portraits thereon. 4. No substance of any kind should come in contact with the surface of a sensitive dry plate, either before or after exposure. India-rubber bands (not vulcanized), one at each end, are the best aids in packing. 5. The defect you describe commonly arises from the sensitive carbon tissue having been kept too long in a damp place, and so become slightly insoluble. Sometimes it happens from not leaving what is described in the Autotype Manual as a safe edge. 6. Carbon prints can be transferred to wood without difficulty. A slight preparation of the surface with gelatine would be desirable. Get the new edition of the Autotype Manual.

**W. J. STILLMAN.**—We have received, just before going to press, another letter from Mr. Stillman, too late for insertion. He reiterates his conviction that he was not placed on the retiring list because of infrequent attendance. It is scarcely worth while to repeat our assertion that he was. He now states that he has never affirmed that the letter to which he attributes his trouble was discussed in a council meeting, but merely that it was attacked by members of council. But if he did not intend to imply that it was in their capacity of councilmen, he might as well have said that it had been attacked by members of the Society or by members of English society at large. On other points he affirms his correctness, unless statements made to him by "gentlemen of recognized probity" be inaccurate; that is, his statements are based upon hearsay, and therefore possess all the vague uncertainty of statements repeated over by two or three persons, no matter how high their probity. As an illustration of the value of hearsay, Mr. Stillman proceeds to inform us that Mr. Swan was objected to because, as he (Mr. Stillman) was informed, of his non-attendance when a member of council. Mr. Swan never was a member of council, and yet we have no doubt that Mr. Stillman was informed by gentlemen of "acknowledged probity" that he was. They were mistaken, as Mr. Stillman is in most of his statements on the questions in discussion.

Several Correspondents in our next.



## The Photographic News, February 6, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### PHOTO.-SPECTROSCOPES — PRINTING BY CONTINUATION — MICRO-PHOTOGRAPHIC DIAGRAMS.

*Photo.-Spectroscopes.*—About three years ago Mr. Rutherford, of New York, whose wonderful photographs of the moon must still be fresh in the memory of every photographer, made an interesting discovery in regard to the spectrum of the sun. As most of our readers know, when a sunbeam is refracted by a prism, there are seen not only a series of colours ranging from red to violet, but certain lines which indicate the presence of different elements and compounds in a state of combustion at the source whence the light comes. Indeed spectrum analysis—or, in other words, the examination of a body in a state of combustion by means of a spectroscope—has now become regular branch of chemistry and physics, and affords a ready means of ascertaining the constitution of different bodies, the bright lines shown, according to their position in the spectrum, their nature, &c., indicating the presence of certain elements or compounds. Rutherford found that looking at the spectrum optically, or recording it by means of photography, furnished two different results, for some lines which were seen by the naked eye were not recorded by the camera, and others again were shown upon the sensitive plate of which the human observer was totally ignorant. Thus in the violet and ultra-violet end of the spectrum the sensitive plate proved lines to exist of which no sign appeared upon the accredited tables of Kirchhoff and Angstrom, while there were some, again, faintly indicated by these philosophers, which the camera in its turn reproduced most vigorously. One thing was very evident, therefore—that no spectrum analysis could be declared to be perfect without the aid of the photographer, for until both optical and photographic observations were made and compared, the research could not be deemed complete. Very recently Dr. Draper has confirmed Mr. Rutherford's observations, and a very excellent photograph of the spectrum was recently issued in *Nature*, which that gentlemen had produced. Mr. Norman Lockyer, F.R.S., whose name as an astronomer stands very high, employs the camera with great advantage in his spectrum work, and has, indeed, found the instrument indispensable in carrying out some of his observations. He has, too, made several discoveries of importance, which, as they owe their origin entirely to photography, deserve our especial attention. The lines of which we spoke just now differ in length, and the longest line is the last one to disappear; or in other words, a body which contains but a small percentage or trace of an element will show a long line corresponding to that element, and nothing more. If a larger proportion of the element were present in the body under examination, then the lines would be repeated, but of shorter length. This fact Mr. Lockyer seems to have proved in a most decisive manner. He allows only a very small amount of sunlight to enter his spectroscope, through the tiniest slit imaginable, and photographs the result; he then opens the slit wider and wider still, obtaining a photograph at every movement, and he finds then that the long lines are the first to appear, and the last to disappear. One other very important fact seems evident, so far as his experiments go, viz., that most of the elements have their lines in the violet portion of the spectrum; in that part, therefore, where the sensitive film has been found a much more critical observer than the human eye; and this is one more reason for supposing that a photo.-stereoscope will in future be a necessary piece of apparatus to every chemist and physicist. Mr. Lockyer's observations seem to point out that only those bodies which have their lines in the violet are really elements, and for this reason it is inferred that bromine, iodine, and chlorine, which do not show in

this most refrangible part of the spectrum, may not be elements after all.

*Printing by Continuation.*—It is a little ridiculous to find things done in a wholesale manner, while the possibility of their being accomplished at all is still an unsettled question in some minds. In Paris there are still those who uphold that the theory of continued actinic action upon a bichromate film is a false one, and not borne out by evidence, notwithstanding the evidence which Mr. Johnson, Captain Abney, and Mr. Priteliard have adduced upon the subject. Two years ago we reported that at Woolwich, at the General Photographic Establishment of the War Department, carbon prints were produced by hundreds in unfavourable weather by the method of merely half printing in the pressure frames, and then allowing the action to go on afterwards for hours in the dark, a considerable time being permitted to elapse between the exposure of the sensitive tissue to light, and its development in warm water. At the time we refer to prints were produced at Woolwich in every respect equal to pigment pictures which are printed wholly in the light, and in this way the work was carried on in full swing through the winter. During the last few months the same plan has again been resorted to, of printing rapidly, the production of photographs connected with the Gold Coast Expedition necessitating pushing forward of the work. The tissue is exposed to light under a negative about three-fifths the time required to give a fully-printed result, and the incipient picture is then put away in a box to be developed the next day. It was found that in bad, wintry weather, such as we have lately been having, only as many as six degrees were marked on the actinometer throughout the day—that is to say, the sensitive paper only coloured deeply six times from morning till night—and this was, as a rule, barely sufficient to print two pigment pictures, the average negative requiring about three tints, or rather more. Therefore, by only half-printing, or little more, the gain in time is very great, and half the number more pictures are got off than in the ordinary way of printing. This plan, we are told, has been carried on at Woolwich for the past two months, and with great success. Some care is, of course, necessary to time exposures correctly, and not to overlook development when the proper period has elapsed; but no more failures are obtained by this method of printing than in the usual one. Another fact connected with carbon printing is worthy of record. When the Woolwich establishment first adopted carbon printing, several years ago, the usual run of negatives were much too dense for the work, and sometimes as many as twenty, and even five-and-twenty, tints had to be recorded on the photometer before a negative was sufficiently printed. Since then it has always been an endeavour to get thin negatives, which give more vigorous prints in carbon than they do in silver, and now clichés are seldom taken at the establishment which require more than three or four tints, copies being fully printed from them in the summer in five or ten minutes.

*Micro-Photographic Diagrams.*—Colleges and schools are rapidly finding out the great value of micro-photographs as a means of imparting instruction. In medical schools, especially, the aid of photography in this way is beginning to be found most essential, for large diagrams, produced by the aid of the camera and microscope, of various medical preparations, are found very useful. Not only does the employment of microscopes in classes often prove inconvenient, but the cost of such instruments, if they are good, is a great obstacle to their employment, and for this reason carefully executed enlargements are much sought after. Another thing is that it is difficult for the professor to point out such and such a portion of an object while a student is examining it in a microscope, while no such difficulty can arise if a bold diagram of the subject is before the students.



## THE CHEMICAL ACTION OF LIGHT.

BY W. T. BOVEY.

ALTHOUGH that phenomenon known as actinism is so intimately related to solar physics, and its existence was familiar to scientific investigators long prior to its enlistment in the service of photography, until recently no theory propounded has afforded the slightest clue whereby a satisfactory elucidation of what would appear to be an insoluble problem could be extracted. Hardly would it have been possible, however, for so important a matter to have long remained unnoticed by photographic practitioners, whose art owes its very existence to the agency of actinism—an agent so potent, invisible, secretive, almost unfathomable, mysterious. And to photographic investigators science will one day doubtless be indebted for a new and fascinating chapter added to men's knowledge of hidden nature.

A correspondent, W. J. C. M., intelligently enquires recently in the *News*, "What if these hitherto called chemical rays should prove to be the electric part of light?" In reply, I would observe that the views suggested in the query quoted harmonize to completeness with an opinion published by myself years ago—an opinion which derives something akin to conclusive support from the investigations of that eminent natural philosopher, Mr. Crookes, who, on the 11th of December last, described before the members of the Royal Society an important discovery in natural science which goes far to identify actinism with electricity. The particulars of the experiment are described in the *Daily Telegraph* of Dec. 13, in the following words:—"He (Mr. W. Crookes, F.R.S.) suspended an exceedingly light lever arm of glass, about one and a-half inch long, to the end of a fibre of spun glass about eight inches long, inside a glass tube. To each end of the lever arm a disc of pith, rather smaller than a threepenny piece, was fixed. As soon as the tube was filled with air, the warmth of a finger outside the tube almost instantly repelled the lever arm. When there was a vacuum of thirty millimetres, which is easily produced with a common air pump, external heat would not move the lever arm. On the very perfect vacuum produced by a Sprengel pump being tried, the lever arm was repelled by the warmth of the finger. Light also attracts or deflects the lever arm under like conditions."

It is to be hoped that some experimentalist, with means and leisure, may venture on a step omitted by Mr. Crookes, for if it can be shown that, with the use of orange-coloured glass, the light loses its power to attract or deflect the lever, the relationship of actinism with electricity will no longer remain a matter of speculation or doubt. The question which matter-of-fact querists would perhaps be inclined to raise in connection with this matter would be to ask, What possible advantage could arise from even a perfect acquaintance with the nature and sources of actinism? No one may venture to predict. One feature of the case, however, is one of certainty. Newton's theory, based on an investigation of the constituents of light, afterwards amended by Dr. Brewster, would, perforce, undergo another, perhaps a final revision, as we have only to move one step beyond an investigation of the electric influence of light to commence an inquiry respecting the source from whence the electric division of solar light emanates. As far as present knowledge extends, we are required to pin our faith to a theory which supposes a ray of light to consist of three parts, representing three distinct physical qualities—viz., heat, light, chemical actinism, the yellow ray being accredited to light, the red to heat, and violet to actinism. Now, it has always appeared to my understanding, from the moment my mind became interested in this inquiry, that the idea of combined properties attached—or rather, I might say, that are said to be centred—in solar light, is far too complex in detail to be indisputable. Personal and persistent observation of many phases of natural phenomena has convinced me that,

in scientific exploration, the further we diverge from simplicity the greater grows the distance from truth. Before we adopt, as finality, the Newtonian theory of compound solar rays, we should do well to see a reason why that the actinism of spring time decreases its force as solar heat graduates from temperate to the swelter of summer intensity as summer months roll onward. Surely there is inconsistency embodied with a thought that favourably admits actinism to be an emanation from the sun direct, one of those threefold threads said to be spun into a single solar ray, because such thought makes the sun itself to act inconsistently, inasmuch as the constituents of its rays must vary at different seasons of the year: weak in actinic force in winter; not so weak, but still comparatively feeble, when the sun has reached its summer altitude; strongest in spring time, and but a trifle less of strength in late autumn. And it is worthy of note that, at such times as actinism is found inactive, free electricity is most prevalent, thus indicating that the condition of actinic electricity is latent, to ordinary tests insensible. What electricity really is, we have yet to learn. There can, however, be no doubt that it is the most important, if not the vital, force of nature; and it is more than probable that in the action of that force is centred the mystery of life, the economy of the growth of vegetation. And, in reference to this last, it is a fact which I have often tested, by direct experiment, that the cause which induces the leaves of plants to turn towards the light may be attributed to electric influence. If this is doubted, a very simple experiment will serve to prove the sensitiveness of plants to such attraction. Excite a glass rod by means of friction against some wool fabric—such as dry flannel—place the excited rod near a freshly plucked leaf or blade of grass, when it will be observed to bend toward the rod; sometimes to cling to it for two or three seconds.

The question naturally arises, when we consider the improbability of a change occurring in the constituent proportion of light-rays at any period of the year, how may we account for the existence of actinism if we separate it from immediate solar emanation? Let us, with Descartes, suppose light to be the result of undulating or wave-like movements, the oscillating motion occurring with inconceivable rapidity. Let us endeavour to conceive those undulations of solar rays moving in the vicinity of a girdle of subtle electric fluid that in a latent and changeable state is mingled with our atmosphere, and it becomes apparent that the disturbance wrought by the oscillations would bring about a corresponding movement in the electric medium, inducing a state of excitement that would probably be repellent towards the disturbing cause. The result of such antagonism would be heat, on the one side, with electricity set free on the other, plus a power developed known as actinism. This statement may appear to be the offspring of rambling thought, an illusion wrought in the mind of a visionary; but if we glance for a moment at an analysis of the solar spectrum, and observe the extreme refrangibility of the actinic violet ray, we notice that our theory fits in with known facts. Why the greater length of violet rays? Why the chemical power that exists beyond the visible line of violet light? If we can imagine this violet ray independent of and in antagonism with the real solar light, we have at hand a reasonable explanation; as the separation induced by the prism would give room for the excited rays to diverge to the fullest limits, and the vibrations, becoming weaker as they reached the outer visible edge, would extend beyond that limit, their activity being insufficient to create light, yet still enough to maintain chemical action.

To produce every argument that could be adduced in support of the theory here laid open to criticism would exhaust the limits of a volume. Suffice it, however, at this time to produce a sufficiency of reasoning to show that the letter bearing the initials "W. J. C. M." is based on sound judgment.



## BE SURE YOU'RE RIGHT—THEN GO A-HEAD.

BY W. HEIGHWAY.

ONE of the principal, and, perhaps, most difficult things to the young practitioner, who finds himself set adrift on the troublous sea of photography, is in the selection of a reliable set of formulae. To get advice of a good practical photographer is not always possible, and the only thing for him to do is to beat about, irresolute and uncertain, between the numberless good rules of working set down in our journals and books, until he worries out for himself some mode of working; unless, weary and dispirited, he perishes miserably in the attempt, and is wrecked on the rock of good advice.

In the case of the amateur, this catastrophe does not come home as a lesson to be learned and profited by, but all, more or less, suffer by an uncertainty, engendered, in a great measure, by carelessness in working out a "good idea," suggested by some generous disceverer.

To properly test a suggested improvement, we must follow out the directions patiently from beginning to end; understand perfectly the nature of each ingredient, and the collective results; then, and not till then, is it wise or right to modify the formula, and begin to experiment on one's own account. Many suggestions are cast aside as useless, only because, in testing them, part only of the ground has been gone over; and an incomplete formula is simply *no formula at all*.

The best advice to be given to operators about to experiment in this lame fashion is, *don't*.

Even in the daily routine of gallery work, there is too little thought and discrimination brought to bear on the work. We go too far, or not far enough, and leave too much to good luck, and, believe me, this happy-go-lucky argument has no weight with photographic chemicals.

For an instance, the nitrate of silver bath. Take one which is charged with alcohol and ether, and, save in this respect, is perfect. We ought to know with certainty in what condition it is, each cause of failure producing certain effects, and these we should be educated to recognise. But to our alcoholic bath. How many there are who would set to work to doctor it for general debility. First, it is reduced by an addition of water, and filtered. This removes a great deal of iodide, which is necessary to its health. The bath is then neutralised with carbonate of soda or ammonia, and then boiled, and again filtered. When all it needed, in the first place, was an hour's "boiling down," which causes an evaporation of the alcohol and ether.

In the same random manner are other portions of our work performed, and I might cite many instances if it were necessary; but it is far from my wish to adopt the tone of the censor. Let us all think well what we are about, for ours is a profession requiring a great deal of nicety and discrimination. Think before you act. Think of what you have to do, and why you do it, and there is then little fear of going wrong.

## KRONE'S DRY PLATE PROCESS.\*

AFTER the plate, coated with silver collodion, has been brought into the iodide of potassium bath *c*, it is allowed to remain there quietly for half a minute (in the bromo-iodide of potassium bath *e* 1 the plate must remain for at least ten minutes, because the formation of bromide of silver takes a long time to form; in this case, the plate is allowed to remain in the bath while a second one is being prepared). It is then agitated, in order to dissolve the alcohol and ether in the film in the watery fluid. After the lapse of a minute, the greasy markings on the plate disappear, and the film is then lifted from the bath and rinsed with ordinary water. As iodide of potassium (as also bromide of potassium) is easily dissolved in water, this rinsing of the plate is very soon accomplished, but

little water being required, and the plates are rendered thereby perfectly clean. After use the bath is filtered back into the stock bottle, and, when the quantity diminishes, fresh solution is added.

The iodide of silver now upon the plate, from the fact of its being formed in an excess of iodide of potassium, is insensitive to light, for only when the salt is produced in an excess of nitrate of silver is it acted upon by luminous rays. In this insensitive state the plates may be dried, and kept for subsequent employment. On the other hand, plates prepared in the bromo-iodide bath contain iodide of silver that is sensitive to light, as also sensitive bromide of silver, and for this reason must be sheltered from the action of light.

To render the plates ready for employment in the camera, we prefer before all sensitizers, so far as our experience goes, nitrate of silver, because this forms with resinous matter an organic compound, something analogous to albuminate of silver in the collodio-albumen process. A silver bath prepared according to the under-mentioned formula is what we make use of:—

*f.*—Silver Bath.

Nitrate of silver...	6 grammes
Distilled water ...	100 cubic cents.
Iodide of potas. bath <i>e</i>	3 drops

In the case of bromo-iodised plates, three drops of the bromo-iodide of potassium bath *e* 1 are substituted for the last named.

The silver is dissolved in the water, and the iodide of potassium bath dropped into the solution, which is afterwards briskly shaken. The greater part of the freshly-formed iodide of silver is dissolved in the nitrate of silver, and for this purpose the mixture is allowed to stand overnight, and filtered next morning. The silver bath does not require to be strengthened, for the slight consumption which combines with the resin may be disregarded; therefore, when the stock gets low, a fresh quantity is added, care being taken to filter the liquid every time it is poured back into the stock bottle after use.

The iodised and washed plates (either just washed, and, therefore, quite wet, or taken from store, where they have been in a dry state for some time) are now brought into the silver solution, contained either in a vertical or flat bath. The plate remains for half a minute in the silver bath, the solution not requiring agitation during the period, at any rate if a vertical dipping bath is employed. After the plates have been taken out and drained, they are passed into a flat bath of clean water, in order to weaken the envelope of silver surrounding the plate, by gentle motion therein; then the film is further washed, by means of a fine rose from a watering pot, and dipped under water two or three times with the hands, and finally it is rinsed with filtered water. Some attention must be paid to this washing of the plates after sensitizing; the operation cannot be dispensed with, and upon its being efficiently performed depend the keeping qualities of the plates. The latter are placed to dry in a drying cupboard, or in an open box, covered with thin stuff, stretched over it to keep flies or gnats, &c., from entering. This, of course, happens in a dark room, as also the previous operations of preserving and washing; the films should also be sheltered, even from light entering through a yellow glass window, or from a candle light.

The time of exposure should not be curtailed, for a full period will do no harm; about the same as for collodio-albumen plates is needed.

Between exposure and development any amount of time almost may elapse. Our experience does not, however, extend so far as to justify us in saying that when the plates are developed only after a lapse of months, they should receive the same amount of exposure as when they are developed immediately. A properly exposed plate requires about a quarter of an hour to develop, intensify, fix, and wash, and shows all details in the highest lights and deepest shadows, with the richest tones, and the most marked co-



trasts between light and shade. The development is conducted in the following manner (acid development) :—

<i>g.—Developer.</i>			
No. 1.—Pyrogallie acid	...	...	7 grammes
Water	...	...	1 litre
Acetic acid	...	...	10 cubic cents.
No. 2.—Silver bath /	...	...	100 cubic cents.
Acetic acid	...	...	10 drops.

The plate is first moistened with distilled water, the same being either poured over the plate, or the latter immersed in a bath and then treated with the pyrogallie solution No. 1; after a few moments the latter solution is poured back into a developing cup, a few drops of No. 2 solution added, and the plate again treated with it. The picture appears, if it has been properly exposed, in about half a minute, or, at any rate, comes fully out within three minutes; and, on being further tried with a mixture of No. 1 and No. 2 solutions, attains its full vigour in a few minutes. The film is then washed as usual, and fixed with hyposulphite of soda or cyanide of potassium; it receives, of course, a good final washing. Should the result be lacking in vigour, it may now be further intensified with a mixture of the two solutions, but if this is necessary the film should be previously washed with more than ordinary care, in order to prevent the formation of a sulphide of silver precipitate, which must inevitably be produced if any hyposulphite be left clinging to the plate.

In the photographic operations to be undertaken at the transit of Venus, the acid development, with little addition of nitrate of silver, must be employed with this process, no increase in the lines of an image being produced except in the case of intensifying, and this is never necessary with the energetic action of the sun. Old and experienced photographers demand alkaline development, but a great drawback to the same is that it loosens and lifts the film. After drying the plates are warmed, and either coated with varnish *d*, or with that manufactured by Schering.

It seemed advisable to us to ascertain the behaviour of the albumen in this process, and with this view we coated plates with silver collodion, without addition of varnish, iodised them, washed them, coated them with uniodised albumen, as mentioned in our collodio-albumen process, washed again, and allowed the plates to dry, to be sensitised at some future time. Other plates we sensitised at once by washing over with fresh nitrate of silver solution (six per cent. strength), mixed with a little acetic acid. The plates yielded identical results, whether they were treated with the silver solution at once, or dried and silvered weeks afterwards. They worked rather more slowly than the varnished plates, but, nevertheless, gave excellent results. While thoroughly exposed plates, prepared by the collodio-albumen process, are of an olive-green tint, the image produced upon these films is, on development, of a violet-brown. Further experiments were then made with the process somewhat modified, the behaviour of the plates, without lac or other addition, being investigated. Some silver-collodion plates, without varnish, were iodised and washed, and then a portion of them sensitised at once, while others were first dried, and then sensitised in the silver bath / . We had here to do only with pure iodide of silver in collodion, without any other combination with silver, for the pyroxiline does not combine in any way. Upon these plates we were only able to secure very matt images, like those on unprepared paper; indeed, the minute quantity of shellac added in the process proved, in all our experiments, to be the cause of the brilliancy in the pictures, and of the permanent character of the film. The combination of silver and shellac, like albuminate of silver, takes the place of the free nitrate of silver in the wet process as sensitiser, betraying a tendency to absorb iodine.

Passing now to the aspect of the film under the microscope after exposure and development, we will give attention to

the particular nature of the network on the film. In the first place, it must be mentioned that the network in every part of the plate, after completion of every operation, is precisely the same, and occupies the same position on the plate as before its exposure to light. We have proof here, therefore, that the film is perfectly stable, and that it is especially fitted for the main purpose for which it is designed. From the character of the network, too, we are able to know whether we have added too much varnish to our collodion. The less the addition of varnish, the more delicate is the network formation, the finer is the film, but also the more liable is it to injury. By an addition of varnish (from one to six drops to ten cubic centimetres of silver collodion) the network is very regular; it is strongest where the collodion upon the plate is driest. Four to six drops of varnish yield a network which is still quite fine enough, and the permanence of the films leaves nothing to be desired, and there is material enough present for the production of a sufficient quantity of shellac and silver compound to obtain the highest amount of vigour in the picture. If more than six drops of varnish are added, the network becomes injured, and is unequal upon the film, being divided generally in the middle, and this circumstance is the more glaring the greater the addition of varnish. To a sharp eye this appearance of lines or shading is apparent upon the film, which appears to be corroded, or eaten through. On adding nine or ten drops of varnish to every ten cubic centimetres of silver collodion, nearly all the network, in the direction where the collodion has been poured off, appears split and broken—the splitting being very apparent in the middle. At the same time the net walls are very thick, the structure of the film very coarse, and every hair or fibre that may accidentally appear upon the film is surrounded with coarse particles. As the network betrays this appearance before exposure, the plates may be easily recognised on examination by transmitted light, and can be put on one side. In one and the same batch it can never happen, however, that some have a delicate and uniform network, while others have the latter phenomenon in too marked a degree; either the plates are all good or all bad. That they will not turn out of the latter kind need not be feared, if our prescriptions are explicitly followed. To be quite sure, it is best not to mix more than four or five drops of varnish with every ten cubic centimetres of collodion, for if a little brilliancy and intensity be sacrificed, still there is then no danger of producing unserviceable plates. It is well also not to employ a supply of collodion too long, when, from being poured on and off, it becomes thickened by evaporation.

One very particular advantage of this new process lies in the fact that the film, so far as our experience during the last year teaches us, remains perfectly stable, even when exposed continually to the action of a moist atmosphere, or frost and heat. The particles forming the film, which, under the microscope, appear to be of a most homogeneous nature, do not seem to be altered, when magnified sixty diameters, by any changes that may take place in the temperature or moisture of the atmosphere around. The particles always remain in their places, so that the image retains its primitive position upon the glass plate, and its outlines and measurement are not varied. The best and most reliable proof of this is furnished by our own microscopic productions, in which exactly the same position of the plate, shown by a cross scratched thereon, is maintained after development, fixing, and washing. These pictures convince every spectator of the unalterable nature of the network of the film. If, moreover, the measurement of the results is effected in an atmosphere of the same temperature as that in which the image has been produced, there can be no doubt as to the accuracy of the same, and the high scientific purpose of the expedition in employing photography would be answered.



## MEANS OF EXCLUDING CHEMICAL RAYS.

BY JOHN M. BLAKE.\*

I HAVE once before called attention to the value of bichromate of potash solution for this purpose. By its use we can obtain an excellent illumination, and at the same time it is very effective in stopping out chemical rays. Four years' experience in its use has confirmed my first impression as to its utility; but I can now give some further hints that may be useful.

My attention was first drawn to the properties of this solution by mention made of it by Mr. B. Ford (see *PHOTOGRAPHIC NEWS*, 1869, p. 451). He employed the solution, inclosed between two plates of glass, and was thus enabled to watch development through it when out of doors.

Soon after I had given the results of some experiments, made to determine the comparative value of this means of illumination, the matter was reduced to practice, and very little modification has since been found necessary in the original arrangement. In the first place, it is well, as involving less trouble and expense, to depend upon yellow paper, as heretofore, for the general lighting of the room—that is, when a window of sufficient size is available—but to have some means of darkening this readily when danger of fogging is apprehended. Then immediately opposite, and as near as possible to the place it is most convenient to hold the plate while developing, have one or two common cylindrical quart bottles filled with half saturated solution; each should stand upon a small circular shelf with raised edge, placed at the bottom of an opening in a thin board partition. White light should be completely excluded by tacking elastic woollen cloth, so as to press the edge on against each bottle, and also by blacking the bottoms if found necessary. The necks of the bottles should come just inside of the partition, the shelf being inclined for this purpose; thus arranged they can be taken out on cold nights, to avoid freezing. Glycerine or alcohol is not admissible as a preventive; it would reduce the chromic acid. Only solution made from clean crystals should be used. This apparatus will throw a bright light upon an object brought near to it, and its chief value will be for the critical examination of negatives during and after development. Few will undertake to light the whole room by this means, although it is easy to imagine what a non-actinic paradise is thus brought within the range of possibility.

In order to make the most of the small aperture that we do use, it is necessary that the light from the sky or snow-covered ground, &c., should not be obstructed from reaching the bottles. It will then pass through from all directions, as through a globe lens, though from an even larger field. The globular form of containing vessel will thus be found superior to the flat; but a cylindrical vessel is cheaper, and more easily replaced, while practice shows it to be little inferior to the globular form. Two one-quart bottles of bright glass were found equal to an eighty-ounce thin globular flask eight inches in diameter. The bottles can be placed close to an argand lamp, when preparing plates in an evening, and thus a powerful light thrown to a long distance, making drying racks and bath visible with an entirely safe light, while by a near approach a splendid light can be got for development. It is well, once in a month or two, to filter the solution, and wipe the inside of the bottles to remove any deposit that may obstruct the light.

Two four-ounce vials filled with nearly saturated solution gave a splendid illumination inside a tent of the Rouch form; one was placed in the top and received the skylight. When the sun was shining on one of the vials, but screened by tissue paper, a light was obtained that a photographer, from habit, would instinctively shrink from; but plates were prepared, drained, and developed, quite free from fog. The advantage of having such a light to develop by will strike any one on trial. It often happens in many mechanical

operations that a workman will accomplish much more work, and do it better, if pains be taken that he has a proper light by which to work. Employers often overlook their own interests by not recognizing this simple fact. Why should this be any the less true in the case of development, an operation requiring great experience and care, and attentive watching? In a proper light, the point where the last portions of clear glass are leaving the shadows, or the first symptoms of fog, can be readily detected. Who cannot recall experience in working in some black hole, where the operations have been pretty much reduced to the game of hit or miss, and you could only know what you had bagged, or what blunders you had failed to commit, on emerging into daylight? This is an extreme case; good work can be done if care is taken to profit by ordinary means of illumination. The use of the light through bichromate of potash solution, it is claimed, will enable us to make still another step in advance.

And now in regard to the reason of the superiority of this solution; the spectroscope shows at once. If we start with a very dilute solution, we shall see that the transmitted light shows the spectrum in the red and yellow with undiminished brilliancy; while the green, and part way into the blue, are visible to a certain extent. As we increase the strength of the solution, the blue is soon cut off entirely, and with a strong solution, the portion of the spectrum that contains the active chemical rays is suddenly cut off from the middle of the green, while the red and yellow rays are transmitted with little loss of brilliancy. That portion of the green remaining adds to the illumination, while its chemical activity is almost nothing.

If we compare yellow pot-metal glass, just such as is commonly sold for this purpose, we find the light greatly diminished in the red and yellow, and while the transmitted light is thus robbed of its most valuable part for visual purposes, the spectrum can be traced far into the blue. A specimen of flashed yellow glass was found not to be superior to the other variety.

Certain varieties of flashed red glass make perhaps the most effective screen known; but there is the drawback that little light is transmitted, it being only a part of the red. Full sunlight may be allowed to fall, through a suitably chosen sample, upon a sensitive plate for several seconds without producing fog. Yet by the aid of the spectroscope and direct sunlight, blue or violet transmitted light can be detected with little difficulty, provided we superpose a piece of green glass to cut off the glare of red light. A blue sun can be seen by simply looking through the red and green glass mentioned, with the addition of a piece of blue glass.

The utmost amount of light that can be transmitted by any possible medium can of course only approach the amount that falls upon it. If one medium transmits three times as much light as another, and has at the same time the advantage that a sensitive plate can be exposed to its full intensity thirty times as long without producing fog, it is reasonable to conclude that the former is ninety times more efficient. If we reason in this way we may take the above figures as expressing the relation of bichromate solution to yellow glass. If we choose, we can continue to dilute the solution until the same number of seconds' exposure to its full intensity will fog a plate, as when it is closely approached to the yellow glass window. Now our solution will not admit very much more light than it did before, since when strong it transmitted the greater part; still there is a marked increase in the light, and it looks so white, that one at first can hardly credit that a plate will stand as good a chance of developing up clear as before the comparatively dark yellow glass window. A landscape was taken in ten minutes through a yellow glass by means of a portrait lens.

A word in regard to the poisonous properties of bichromate of potash. A case is reported (see *Taylor on Poisons*) of death in five hours from accidentally receiving a small quantity of solution into the mouth in using a siphon.

\* Philadelphia Photographer.



# The Photographic News.

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## THE PHOTOGRAPHIC SOCIETY.

On Tuesday next the members of the Photographic Society will have an opportunity of expressing an opinion in relation to the laws by which they have been governed during the twenty years of the Society's existence. It affords matter for curious reflection to note that the society has passed through three septennial periods, has done much work, has seen much change, and, after serious decline and pecuniary embarrassment, has again emerged from the cloud into full prosperity: solvent, active, vigorous; all this time existing under a code of rules confessedly clumsy in structure, involved and obscure in meaning. We are forcibly reminded of Goldsmith's lines (or rather Johnson's lines on Goldsmith's poem), which suggest that of all the ills that mankind or society can endure, how infinitesimally small is the part "that laws can cause or cure"! It is probable that neither the efficiency, the prosperity, nor the adversity of the society was influenced one iota by the laws in question. When the society was, indeed, at its worst estate, but a few short years ago, no one dreamed of imputing the difficulties to the laws, and without altering the laws, by the close application, and the devotion of time and money by the council during the last few years, the society has thoroughly recovered its solvency and vigour.

A time of prosperity is, however, in many respects pre-eminently well fitted for revision and re-organization of laws. It is not in the midst of the storm that a ship is overhauled for re-caulking, re-trimming, or repairs. In regard to the laws of the society, few persons will be disposed, we imagine, to affirm that they are models of perfection. Many years ago, when the society was in a state of comparative infancy, the Chief Baron referred, in his seat in the presidential chair, to the necessity of revision, and at that time such revision was attempted: new rules were draughted, and a few copies were printed; but, after careful consideration, they were not adopted, and the matter was put off until a more convenient period. Thirteen years ago, some correspondence on the needed revision of the laws was published in the PHOTOGRAPHIC NEWS, and, according to one correspondent, unless the laws were amended, the extinction of the society by the superior energy of rival societies was inevitable. But the society was not extinguished, whilst some of those whose superior energy was the base of comparison have long ceased to exist. There has been a persistent apathy in the members of the society, in relation to the rules, which must be very disheartening to those who believe earnestly in the importance of reform. But the machinery now set in motion must issue, we imagine, in a complete revision of the laws, and it only rests with the members to make

the provisions of these laws as equitable and as liberal as the most prudent reformer can desire.

It may be well briefly to state the actual state of affairs. There will be two meetings at which the machinery of reform can be put into operation—the special meeting, and the annual general meeting. For all practical purposes a special meeting was unnecessary, as, by the provision of existing laws, any desired alteration can be made at the annual meeting, due notice having been given at the previous monthly meeting; and notice of motion for a committee to revise laws was given at the meeting in January. But the special meeting, having been "requisitioned," was appointed by the council, for convenience, on the same night as the annual meeting, giving it precedence, however, as regards the hour of meeting. The requisitionists have given notice of motion for the amendment of Rules V. and VII. Now, according to the law which governs special meetings, the business of which due notice is given can be transacted, and that only. The amended rules of the requisitionists can be accepted as they are, or rejected; but they cannot at that meeting be modified. To avoid the absolute necessity of either alternative, the council have given notice of an amendment which comprehends much more than the motion of the requisitionists, as it invites the co-operation of the society in a complete revision of all rules. In effect, this is practically the same as the motion of which notice was given by Mr. Hughes, and might be adopted by that gentleman, without impropriety, as his own. But it became necessary to submit it at the special meeting, for the purpose of avoiding the necessity of the alternative to which we have referred. Many members may not approve of the resolutions of the requisitionists as they stand, but may, at the same time, desire reforms. The amendment of the council meets the case of such members, and permits effect to be given to their wishes at the special meeting. The amendment of the council possesses the advantage of placing that body in a fair position in relation to the society, and, by suggesting that the committee should consist mainly of ordinary members of the society, shows the groundlessness of the charges made by some, to the effect that they were opposed to reforms.

There is, moreover, a much more potent reason for a revision of all rules in such a case than at first appears. Apart from the fact that many other rules need reconstruction, there arises another consideration as important to the requisitionists as to those who may not hold the same views. If the resolutions of the requisitionists were adopted, the new laws would be antagonistic to some of those left unrevised. It is a very difficult thing to tinker a code of rules by the modification of one or two of them, leaving untouched the rest, without getting into confusion. We have not examined the relation of the proposed amendments to the laws throughout; but at first glance we notice that, amended, Law VII. is opposed in one of its details to the very first provision of the existing laws which would be left untouched. In this paragraph it is provided that, besides president and vice-presidents, the business of the society shall be conducted by eighteen members of council and a treasurer. No amendment is proposed to this; but in the proposed new Rule VII. it is provided that the treasurer shall be selected from the eighteen members of council. The first provision in existing rules states that the *ordinary members of the society* shall elect their treasurer. In the proposed new rule the Council are to elect the Treasurer. Now, as these existing provisions remain unaltered according to the notice of the requisitionists, and their new Rule VII. contravenes them, the passing of such new rule would issue in a code of which the first provision or preamble contradicts what follows. There may be other contradictions, as we have only glanced to ascertain whether the new rules were in harmony with the preamble of the code of which they will form part. The first impulse of many readers will be to



exclaim, "But why not also alter the first provision to secure harmony?" Simply because, as we said, no alteration can be made at the special meeting without due notice; and to secure harmony in this, and possible other points, another meeting, with due notice of all the modifications desired, must be given.

For the convenience of our readers, we print on another page the existing rules and the proposed modifications.

The proposed new laws are, we think, open to objection in two or three points—chiefly on the score of insufficient liberality and breadth of spirit. It is proposed that all officers shall be elected for three years, and that at the end of that time the retiring members shall be disqualified for re-election until after the lapse of twelve months. Both provisions appear to us to be bad. A three years' undisturbed tenure of office is much too long for one who may prove unsuitable for the position, either from indifference to, or unfitness for, its duties; whilst disqualifications for office at the end of three years, no matter how admirably its duties are fulfilled, is surely a short-sighted provision. Take the case of president, for instance: An efficient president is most important to the well-being and comfort of a society, and, once secured, should not readily be given up. One of the most efficient and happy of all the photographic societies is, by common consent, the South London, and the Rev. Mr. Statham has presided over the society ever since its commencement fifteen years ago. His loss would be regarded as a calamity by every member of the society, and it is more than probable would have issued years ago in the extinction of the society. Yet by such a rule as that proposed his retirement from office would have been imperative. With a yearly tenure of office, every officer would be liable to retirement, but eligible for continuance, so that inefficient officers would be easily got rid of, and efficient ones retained as long as the society desired. To prevent changes so sweeping as to interfere with the business of the society we should provide for the retirement every year of one-third, their selection and replacement being left entirely to members of the society. By this method there would always be two-thirds of the council familiar with its business left in office; but, as any one of the whole number might be retired by the voice of the society, none would have more than an annual tenure of office. The services of each officer, in the shape of attendances at council, reading of papers, committee work, &c., might be placed within the knowledge of the members as a guide to election.

Another very undesirable provision in the proposed new rules is the nomination of candidates for office in open meeting by proposing and seconding a month previous to the election. It would involve the possible devotion of the January meeting, as well as the annual meeting, to business purposes, and in any case a certain amount of invidiousness and discomfort might easily be involved in open pitting of a series of candidates against each other. The present system, which is clearly open to some objections, is better than this, as it merely demands that lists of nominations shall be handed to the secretary in writing. Further, the personal proposing and seconding of candidates ignores another very important point in connection with a society like the Photographic Society of London. Of the three hundred members of whom it consists, probably upwards of two hundred reside in the country, and can rarely or ever attend the meetings. In order to secure any voice in the government of the society to which they subscribe, they would be under the necessity of coming to London to attend two meetings of the society, at which routine business, rather than photographic matters, would occupy a large portion of the proceedings.

And this brings us to another very important question for which no provision is made, either in the old or new rules—the voting of country members. In any satisfactory code of rules it seems to us that such provision should

form an important element. It would not be difficult to establish a system of employing voting papers combining the principle of the ballot, and admitting of non-personal voting. The proxy system, as usually employed, is open to serious objection, as it permits facilities for a governing board, or a combination in a society, to organize to secure a number of proxies by which any proposal might be carried or swamped. But if voting papers were forwarded to all members, containing all nominations forwarded in writing to the secretary, and these voting papers were returned to the secretary, who should deliver them, still sealed, into the hands of scrutineers appointed at the annual meeting by the members, no such difficulty need exist, and country members would possess their legitimate voice in the management of the society. We here briefly indicate a possible method; but that some method with such aim should be adopted must, we think, commend itself to all just thinking men. The mode of securing the best results in such matters will, no doubt, be best devised by a well-chosen committee; and as they would report to a general meeting, the whole question will, doubtless, come before the society before any new code can be adopted.

#### ACCELERATION BY LIGHT.

The method to which we called especial attention in our last, of exposing a sensitive plate to white light passing through opal glass for a few seconds, as a means of shortening exposure, has been verified by some of our readers in a most satisfactory manner. We have been favoured by Mr. Samuel Fry with a series of negatives showing the results of comparative exposures on two halves of the same plate, on the same subject, in which one half was exposed in the ordinary way, and the other half had a previous exposure of a few seconds to light through opal glass. Nothing could be more striking and satisfactory, a manifest saving of from half to two-thirds of the exposure on the sitter being saved. It is unnecessary to describe every plate, but, as an illustration, we mention the details of one before us. On one-half of the plate we have an image, decidedly under-exposed, with a twenty-five seconds' sitting; on the other half an image of the same sitter well exposed, with twelve seconds' sitting, having had previously four seconds through opal glass. Mr. Fry informs us that in a letter just received from Mr. Slingsby, that gentleman informed him that in producing some of his large negatives during the last few days he had tried this method, and obtained as good a negative in twenty seconds with the aid of opal glass, as he did in fifty seconds' exposure without it. *Verbum sap.*

#### GELATINO-BROMIDE OF SILVER.

Our attention has been called by Mr. H. A. Kennett to some most important details of the discovery in connection with gelatino-bromide of silver which he has recently patented. The various difficulties which have seemed to surround the use of gelatine emulsions hitherto have precluded much idea of the superseding of collodion by gelatine. To begin with, gelatine is a substance of variable and uncertain physical quality. It is very unstable when in solution, and almost impossible to keep. Films prepared with an emulsion of gelatine were apt, in some cases, to soften seriously, or even dissolve, when immersed in water previous to development, and in others obstinately to repel the water. These and other difficulties rendered its use instead of collodion unattractive to the majority of photographers, amateur or professional. In the project of Mr. Kennett all these difficulties seem to be eliminated. He has succeeded in a method of preparing a suitable gelatine which can be sent out to photographers in a dry state, containing, however, the sensitive bromide of silver. All that remains to the photographer is to add a stated proportion of warm water to a few shreds of the sensitive gelatine, and in a short time he will have an emulsion ready for use. A plate coated with this and exposed



whilst wet is said to be as sensitive as an ordinary wet collodion plate. A plate coated with the emulsion and dried is, without further preparation, a dry plate which will keep for months, and require an exposure of less than twice that required by a wet plate. There is, we are told, equal immunity from risk of the gelatine softening and dissolving, and from its repelling the water or aqueous solutions used in developing. Surely the prospect of being able to obtain a solid sensitive substance, keeping indefinitely, ready for use at a few minutes' notice wherever warm water can be procured, and giving quick and excellent results, must be a very attractive one to photographers.

The results themselves, several of which Mr. Kennett showed us, are certainly perfect. The singular delicacy of the image in a film so homogeneous and free from structure as gelatine can be easily understood, and there is that rich fine quality which results from the densest deposit, retaining a slight translucency, instead of being quite opaque. The colours can be varied at will, and in those we saw ranged from a fine black, through various tints of olive and brown, to a deep ruby. The images were free from defects of any kind.

The method which Mr. Kennett has worked out appears to be very simple as well as promising. Having made extensive arrangements for a supply of the right kind of gelatine, it is dissolved with the bromide salts, and this done, the nitrate of silver in equivalent proportion is added, and at once forms the emulsion. A little excess of either salt is not important, as it is next necessary, not only to get rid of any such excess, but also of the nitrates of potash or other base formed in the double decomposition. Various methods have been proposed and tried for effecting this, dialyses having been one of the most promising. Difficulties and impossibilities were found attending most of the methods tried; but at length Mr. Kennett devised a plan of simple washing which completely effected the purpose. The emulsion after this is dried in thin sheets, and then cut up into shreds, which simply consist of gelatine and pure bromide of silver, for use as we have described. Alkaline development is of course employed.

At present we must confine ourselves to this brief statement of the promise of the project, which seems based on legitimate premises. Verification in practice rests with the future; but as the facilities for such verification will very shortly be placed before photographers, the promise is, we think, sufficiently tempting to deserve careful attention and investigation.

#### SPIRIT PHOTOGRAPHY AGAIN.—IMAGES FROM INVISIBLE RAYS.

THE *Examiner* of last Saturday contains a long communication from Mr. James Thornton Hoskins, on some recent investigations in connection with spirit photography made by himself and a friend. The investigations were made at the studio of Mr. Hudson, of Holloway Road, whose name is familiar to photographers as connected with "spirit photography." Being personally unacquainted with photography, he says:—

"I took with me a friend, Mr. Noyes, of the United University Club, a gentleman who has photographed extensively in Egypt and Syria, and who has therefore sufficient experience of the art to be confident of being able to detect any attempt at fraud, if admitted to the photographer's sanctum. Mr. Noyes, I should premise, is a gentleman of good social status, whose honesty is above suspicion. On our arrival at Mr. Hudson's, we met, by appointment, Mrs. Olive, a trustworthy medium, or person gifted with a sensitive negative-magnetic temperament, and thereby enabled to facilitate communications with psychic agents, whose corporeal forms, being more or less fluidic and etherialized, are invisible to the sense of sight in its rude elementary physical condition. After some preliminary conversation, we all passed through the garden into the

glass-house, at the extreme end of which, and entirely partitioned off from it by a canvas screen immediately behind the sitter, is a closet, intended to accommodate the medium. When the plates were prepared, and all was ready, Mrs. Olive left the glass-house and entered this closet, so that it would have been physically impossible for her to come within the range of the instrument. I was taken five times. On the first occasion, I persisted in the wish that I had mentally expressed on the preceding day, *i.e.*, for the presence of two departed relatives, the result being that two very indistinct shrouded forms appeared on the negative, one on either side of me. Not being particularly satisfied, as the features of one were entirely concealed, and those of the other but dimly visible, I sat, or rather stood, again. The next three attempts were complete failures. But on the fifth and last sitting, I silently wished for a manifestation by one spirit only. There then came out, in accordance with my desire, a good, though not very strongly-marked, likeness of my mother, who quitted this sphere in the winter of the year 1862."

Mr. Hoskins seems aware that in the statements just made he has tested the credulity of his readers, for he proceeds:—"Doubtless many who have read thus far will straightway suspect imposture on the part of Mr. Hudson. They will not unnaturally recall to mind instances of 'double exposure' and other trickeries. But the fact of this manifestation having taken place under strict test conditions is of itself, setting apart various other important considerations, a sufficient answer to that objection. Mr. Noyes was admitted to the dark room. He examined the plates used in the process sufficiently closely to be able to recognize them, saw them cleaned, inspected the camera and slides, placed the sitter, focussed the instrument, and superintended the processes of collodionizing and sensitizing the plates; remained in the operating room during the whole process, saw the plates taken out of the slide, watched with me the process of developing the pictures, and saw the portraits emerge simultaneously with the portrait of the visible sitter."

The explanation which Mr. Noyes gives to his friend, and which is quoted in the communication, is one ingenious blending of science and transcendentalism:—

"Those who are new to the subject may be inclined to scoff at the idea of being able to photograph an object invisible to the human eye. Good spectroscopists, however, know by experience that the camera will register outer rays of the spectrum, which, though invisible to the physical eye, are chemically potential. Indeed, they are aware that if a room be illuminated by prisms so arranged as to cut off the violet rays, the resulting light, though almost undiminished in brilliancy, will hardly act on the chemicals; whereas, by an arrangement which admitted the chemical rays and excluded the light rays, it would, in all probability, be feasible to produce photographs in a dark room. It would seem, therefore, by no means incredible that a more thorough acquaintance with the laws of light than we at present possess should enable spirits, invisible to ordinary vision, to render themselves visible to the camera by some occult concentration of the chemical rays on the magnetic envelope or spiritual body—the *nephes* of the Book of Genesis, or *perispirit*, as it has been called by French Spiritualists—and which can encrust itself by attracting quasi-material particles from the magnetic emanations of certain media suitable for the purpose—emanations which Reichenbach long since proved to be visible to sensitive organizations. Reichenbach's evidence has been disputed, but I have recently obtained unimpeachable independent testimony to support it; it not only helps one to understand the theory of Spirit Photography, but helps to explain the occasional materialisation of spirit forms to an extent which renders them visible to the physical eye. Ghosts will soon cease to be supernatural."



## Critical Notices.

**INSTRUCTIONS IN PHOTOGRAPHY.** By CAPTAIN ABNEY, R.E., F.O.S., F.R.A.S. (London: PIPER and CARTER.)

WE noticed some time ago an edition of this work prepared by Captain Abney, as Instructor in Photography at the School of Military Engineering in Chatham, for the use of his classes. We then expressed our regret that an instruction of such pre-eminent excellence should be confined to private circulation. We are glad to announce that a revised and extended edition has now been issued for general circulation. Captain Abney's manual is, in some respects, unique in its class, in character as well as excellence. There is one feature especially valuable, which we have found in none other. All the instructions, which are as simple, lucid, and easy to apprehend as they are accurate, are accompanied by explanations of the *rationale* of the operations to be conducted. This, which might at first sight seem confusing to a beginner, is, in reality, not so, as the instructions can be read, understood, and followed quite independently of any attention to the statement of the reactions involved; and when the practical points have been mastered, the work can be again studied with advantage for information as to why such and such results follow given operations. The book is singularly valuable, moreover, in its completeness, and in that completeness arising out of the practical experiences of a skilled worker in many varied branches of the art; the instructions are not, therefore, the work of a mere compiler. For example, there are several most important chapters on photo-mechanical printing processes, a branch on which the author is peculiarly fitted to speak. Dry plate photography is still more exhaustively treated, and with just the same practical authority. The work is, in short, the most comprehensive and trustworthy guide which has ever been issued, within the same compass, in connection with photography, and will be consulted by experienced workers and beginners with equal advantage.

## ON A NEW STUDIO.

By S. FRY.

THE Editor was good enough to insert a short note from me, a few weeks since, on the subject of taking large direct portraits. I then made some remarks on the best kind of studio and lighting, which seem to have attracted much attention, if I may judge from the number of requests I have received for further information.

I would first remark, that I see at the last meeting of the South London Society, Mr. B. J. Edwards, following the lead of Mr. Croughton, made remarks implying that it was well known that the difficulties of large portraiture were almost inseparable from the exposure required, and that enlargement from small negatives is the only proper way.

Please allow me to remind photographers that, great and valuable as are the advances made of late years in enlarging, the improvements in large direct work are, to say the least, quite as great. The last Exhibition showed very large direct photographic portraiture, from every part of England, of rare excellence, and quite free from coarseness or exaggeration, and abounding in artistic merit. No enlargement has yet been shown possessing the depth and richness of tone of direct negatives. This is not merely opinion or dogmatism, but was abundantly proved at our late Exhibition.

I desired last year to build a new studio. Ten years had elapsed since mine was erected, and neighbouring premises had encroached upon my light, and my exposures were doubled. I had plenty of room to build, and uninterrupted north light, and the great thing was to find the very best system. I determined to inspect the best and most successful studios in England, and have to offer my best thanks to Messrs. Robinson, Slingsby, Sarony, and Cooper,

and several others who gave every facility for the purpose. The result is, a studio of extraordinary rapidity, and giving the finest modelling imaginable, with the simplest possible arrangements of blinds. The side-light is low (six feet only), and the height to top of roof eleven feet; the north side has glass, except five feet at each end; the south side is entirely dark. The principal features are the low side, and very large steep glass roof; this gives the exact amount of side and top light which is wanted. Either end of the room can be used, and at a moment's notice, and the effects differ in no way.

During this last winter the exposures have been ordinarily insignificantly short, and babies and dogs have been, as required, taken almost without interruption.

If any one believes there is any real difficulty from length of exposure in taking very large direct portrait negatives, I shall have great pleasure in demonstrating the opposite. In addition to the advantages of light that I have referred to, may be named a great range of facilities for cooling in summer and warming in winter. For the former, the side sashes lift completely away, leaving free ingress for air, and lower boards at the upper angles keep the upper part cool. Last year the side of the room was thus open to air for all the summer and autumn months, completely getting rid of the stuffy heat so often felt in studios.

For warming in winter, three hundred feet of four-inch pipe pass through the ten rooms used for business, keeping at all times a genial warmth, and saving all the troubles of stoves or fire-places. The cost of the furnace averages thirty shillings per month only. The pipes pass through the developing room, and are thus of especial use, forming, also, in the studio, a hot cupboard, of great value for warming baths and other solutions, drying negatives, &c. Some time since, various plans for warming studios were described; but as a separate stove would be required for each room, the expense would be very great.

## MIXING SOLUTIONS FOR PHOTOGRAPHIC PURPOSES.

By J. C. LEAKE.

THAT there is matter of more importance than meets the eye, at the first glance, in Mr. Warner's paper on the use of hot water in photography, published some weeks ago in these pages, there can be little doubt. We are not at all prepared to accept his statement that the use of hot water will at all times keep us out of it, by rendering all chance of failure impossible, nor to accept his theories without question. Yet it must be granted that he deserves the thanks of all for calling attention to a method of working which has proved so successful in his hands. But the question at once arises, What is the reason of this success? It must be evident to all that Mr. Warner's theory is erroneous, and that the mere boiling of the water does not, as he supposes, eliminate either all the organic matter or free it from oxygen, &c. If boiled for a considerable period—say, half or three-quarters of an hour—"hard water" is freed from carbonic acid, and carbonate of lime, if present, is deposited. In some cases, where the water is very "hard," to do this is, doubtless, an advantage; but in the water as supplied by most of the most London companies we have not, in our own practice, found this precaution necessary. Could we depend upon the distilled water supplied by dealers, we should probably employ this for the bath; but, on the whole, our experience has been that for all practical purposes that ordinarily employed for household purposes is sufficiently pure. Of course, there is a slight precipitate when this is mixed with the nitrate of silver, but this is of no importance (if it be not an advantage), as it can easily be filtered out.

It will, of course, be asked, of what advantage can it be that a precipitate is formed? And we reply, that we think that in falling, many impurities are carried down by the precipitate, and, consequently, the bath works not only more rapidly, but gives better negatives. One fact,



however, is worth many theories, and we can confidently state that our experience has been decidedly in favour of baths made with ordinary water rather than that termed "distilled." What, then, is the real cause of Mr. Warner's success? We believe it to consist simply in this: *that by the use of hot water he makes perfect solutions of his chemicals.* This idea will probably raise a smile with many photographers, but we have facts which we think sufficient to prove the correctness of our theory.

Everyone who has worked the collodion transfer process knows that one of the most tiresome and frequent causes of failure is the appearance of small opaque spots during the development. We, too, have had our share of these, and, after a long and useless search for their cause, we found only one source from which they could reasonably be supposed to arise. This was undissolved particles of pyrogallie acid. Now, to test this fact we set aside the ordinary solution, and mixed some by dissolving the acid in hot water. This at once freed us from our trouble, and, naturally enough, we concluded that we had discovered the cause.

But hot water cracks glass bottles and measures, and is otherwise troublesome; so, instead of this, we employed methylated spirit as a solvent for the acid, and with such perfect success that we have not, since adopting this method, had a single picture which has not been entirely free from this troublesome defect.

These experiments, of course, set us wondering as to the other solutions employed; and, as the result of very many carefully conducted operations, we arrived at the conclusion that many or most of the defects in our work are caused by an imperfect solution of the chemicals employed.

The remedy is, of course, obvious. We may use hot water for many of our solutions, or adopt other means if we prefer it; but our aim must be to perfectly dissolve every substance which we have to employ.

The plan which we have found to possess many advantages is the following:—We make the whole of our solutions in a concentrated form, and, for the sake of simplicity, of such strength as to require diluting with ten times their bulk of water before use. Thus, the silver "stock solution" is made by dissolving 750 grains of silver in two ounces of water; the iron developer, by dissolving 1,000 grains of iron in five ounces of water. The pyrogallie acid solution, either for transfers or redevelopment, is made by dissolving 100 grains each of pyrogallie and citric acid in five ounces of methylated alcohol. To each ounce of these solutions is added, for use, ten ounces of water, and thus we have always at hand a simple, easy, and rapid method of making up as much solution as we require, without the constant trouble of weights and measures. Of course, to the iron developer we must add the required quantity of acetic acid and alcohol, but these are variable in quantity, and no proportions can be given.

The toning bath for prints may also be made in the same manner, and if it does not work better, it is, at least, a simple and effective method of mixing, and one which renders the tired and busy photographer less subject to the temptation of employing the "rule of thumb" formula.

Now as to the result. Since we have adopted the above system we have obtained pictures which are absolutely free from pinholes or spots of any description, while the ease and simplicity of working have been greatly increased. In no case have we found it necessary to filter the developers. If the stock bottles are kept tolerably full, the few ounces of solution required can be decanted without disturbing the sediment, and, if added to clean water, will be found to be clear and bright. In making up the stock solutions, either hot or cold water may be employed, but the latter will usually answer perfectly.

The advantages of this method of working we believe to rest in the fact that, on account of the time allowed to elapse between the mixing and use, a perfect solution takes place; and we think, further, that this is all Mr. Warner effects by the use of hot water. In conclusion, we would

remark that on no account should the stock solution be used until it has stood at least twenty-four hours, if the full advantage of the system be desired.

### MORE ABOUT ENLARGING.

BY GEORGE CROUGHTON.

MORE about enlarging. There are many little things I have noticed in my every-day practice which could not be put into such a paper as I read before the South London Photographic Society, but yet are worth knowing, in relation to enlarging—bits of practice which probably are known to many, still they may be useful to some. I think it is a great mistake, when one has to describe a method of doing anything, to omit little details with the idea that they are known to every one: they may be just the rock upon which the tyro will split.

It is no use thinking that a mixture of all your old dis-used baths will do for enlarging; the bath must be in the best condition; small defects, which would pass in an ordinary photograph would utterly ruin an enlargement. Pinholes must be avoided like *poison*, as a crop of pinholes upon the transparency will cause the negative to be covered with a number of opaque spots, which upon printing will make your figure look as if in a snow storm. I find it best to keep the bath slightly acid with nitric acid; I put three drops of strong nitric acid to my bath of about two hundred and sixty ounces. Any ordinary collodion will do; I am using a mixture of Mawson's and Huggon's in equal parts.

I am often asked how I avoid stains and streaks with the long exposures. I think a great cause of stains of every sort is putting the plate into the bath before the collodion is thoroughly set. Let your collodionized plate rest upon the dipper at least one minute before lowering it into the bath; then do not plunge it in, but lower it very gently. Put clean pieces of blotting-paper in the corners of your carriers, raise the plate *very* slowly from the bath (not before it is thoroughly well coated, and every trace of greasiness gone), drain and wipe the back with a pad of blotting-paper, and you will never have either streaks or matt silver stains. You may be sure if such stains do occur after all these precautions that there is not acid enough in the bath.

Pyro has been recommended by a recent writer in the News for intensifying the transparency instead of the bichloride of mercury. I use the latter in preference, because I think the pyro piles up a somewhat coarse deposit of silver in greater proportion on the blacks than the half-tones. The bichloride of mercury changes the colour all over in a more equal manner. I find no difficulty in its use of the strength I named, viz., half-an-ounce to twenty ounces of water. I flow it on while the plate is flooded with water, and the action takes place pretty equally, but if I see one place not darkening so quickly as another, I pour it off, and pour it back upon the part that requires it; but if the bichloride of mercury is put into a flat dish, and the transparency put into it, there is no fear whatever of unequal action.

Having said so much about exposing the transparent positive enough, I had forgotten to mention the fact of a long exposure being necessary for the enlarged negative. The class of enlargement with which we are so familiar, the black and white coarse-textured things with ropy hair, are the results of under-exposure. Any one who has done much at copying will know that if they give a full exposure and short development, they can get rid, almost entirely, of the texture of the paper. So it is with enlargements: texture can be quite got rid of by a full exposure, and the stoppage of the development at the right moment, which can only be ascertained by experience.

There is, as Mr. Edwards pointed out, a great power in the hands of the enlarger in the way of diffusion of focus; but even that must be done very carefully. I find that if I try to get this diffusion by turning the camera in—that is, by moving the ground-glass nearer the lens—I do



not get such an even diffusion as by moving it further from the lens. I sometimes resort to the dodge of taking out the stop during the exposure, which answers well for some negatives.

I find a very great advantage in having my developer in two solutions, one of iron and the other acetic acid and spirit. If it should happen that I have given too long an exposure for my transparency, and it makes its appearance directly I put on my developer, I have only to add some of the solution of acid and spirit, and the development is prolonged and put more under control. The same in developing the negative, if the original has been too soft and thin, and the transparency from it is lacking in brilliancy, I use less iron and more acid; if, on the contrary, the original is hard, I use more iron and less acid.

#### RULES OF THE PHOTOGRAPHIC SOCIETY.

For convenience in reference, we here reproduce Rules V. and VII. of the Photographic Society as they now stand, and the rules which the requisitionists propose to substitute at the special meeting to be held on Tuesday evening next:—

##### OLD RULE V.

"The business of the society shall be conducted by the president, three vice-presidents, treasurer, secretary, and the remaining eighteen members of council. At all meetings of the council five shall be considered a quorum. One of the vice-presidents, the treasurer, together with five other members of council, shall go out of office annually, all, or any, of whom shall, however, be eligible for re-election.

"The council shall hold their meetings at such times as they may appoint. The ordinary mode of decision of questions before the council shall be by show of hands, unless a ballot shall have been demanded. Any member who may be personally interested in the question before the council shall retire during the consideration and discussion of the same. The council shall also prepare, and cause to be read to the annual general meeting, a report on the general concerns of the society for the preceding year."

##### OLD RULE VII.

"All officers of the society shall be annually elected, with the exception of the secretary and such members of the council as may not go out of office by rotation or otherwise. The mode of their election shall be by ballot. The council at the ordinary meeting in December in each year shall declare the names of the members of council whom they recommend to retire, and lay before the society the names of those whom they have selected to supply their places. They shall also declare the names of the other officers they recommend for re-election, and cause a list to be suspended in the meeting-room. In the event of any member of the society being desirous of proposing other names than those recommended by the council, a written list of the same shall be delivered to the secretary at or before the ordinary meeting in January; and the same shall be read from the chair, and publicly suspended in the society's room, with the list recommended by the council; and no member shall be eligible for election into the council unless he shall have been proposed in the manner and form above specified."

##### NEW LAW PROPOSED TO BE SUBSTITUTED FOR OLD LAW V.

"The business of the society shall be conducted by the president, three vice-presidents, and eighteen members of council. At all meetings of the council five shall be considered a quorum.

"The president shall be elected to serve for three years, and shall not be eligible for re-election until after a lapse of one year.

"The vice-presidents shall be elected to serve for three years; each year one of them shall retire from office (the rotation being by seniority), and shall not be eligible for re-election, or to serve as a member of council, until after a lapse of one year, but shall be immediately eligible for the office of president.

"The members of council shall hold office for three years; one-third shall retire each year by seniority, and shall not be eligible for re-election as members of council until after a lapse of one year, but shall be eligible for the office of vice-president or president without waiting such interval of time.

"The council shall hold its meetings at times to be determined by itself. Questions before the council shall be settled by show of hands, unless a ballot is demanded. Any member personally interested in a question under the consideration of the council shall retire during the discussion. The council shall prepare a report on the general condition of the society, for submission to each annual general meeting."

##### NEW LAW PROPOSED TO BE SUBSTITUTED FOR OLD LAW VII.

"At the ordinary meeting of the society in the January of each year the secretary shall declare the names of the vice-president and of the members of council who retire from office, shall state the fact when the term of the president's holding office expires in that year, and shall invite the members present to nominate their successors, every name being proposed and seconded in open meeting. The list of nominations shall then be publicly read by the secretary, and a copy of the same shall be sent to every member of the society before the next annual meeting in February.

"The election for all vacant offices shall take place at the annual general meeting in February. If there be no more persons nominated than are required to serve, those persons shall be held to be duly elected. If there be more than one nomination for the office of president, or more than there are vacancies for among the vice-presidents and members of council, an election shall be held for each vacancy, and the person who has the highest number of votes in each case shall be held to be duly elected.

"If vacancies occur by death, resignation, or other cause in the office of vice-president or members of council, individuals shall be elected at the annual general meeting to fill the vacant places, and shall serve the offices subject to the condition of retirement by seniority that would have applied to the persons whose seat they fill.

"The treasurer shall be elected annually by the council from among its own members.

"The secretary shall be annually elected by the council; and if not already a member of council, shall be entitled to an *ex officio* seat at the board, without a vote."

### Correspondence.

#### DIRECT PICTURES VERSUS ENLARGEMENTS.

DEAR SIR,—Allow me to call your attention to a typographical error in my letter on "Direct Pictures versus Enlargements" in the NEWS of last week, in which, by the change of two letters, I am made to affirm the truth of a measure I wish to deny: "That eight inches is much *about* the average of the human face, taken from the bottom of the chin to the parting of the hair, is beyond question?" The word *about* should be *above*. Five inches *focus* also at the end of the paragraph should be five-inch *faces*. As I write with a quill pen, I can easily understand how such little mistakes originated.—Yours respectfully,

R. W. ALDRIDGE.

#### VOTING AT THE PHOTOGRAPHIC SOCIETY.

SIR,—I have just received from the Secretary of the Photographic Society a post card stating that a voting paper would be sent in the course of a few days to all those members who had paid their subscriptions, as it was the desire of the Council to provide all *bona fide* members with the means of voting at the next annual meeting.

Now, I am an exceedingly *bona fide* member, having compounded for the amount of my subscription years ago; and I am also very much interested in the affairs of the Society, and consequently anxious to vote at the general meeting; but this I am effectually prevented from doing. The terms stated on the post card are, that the voting paper is to be delivered "personally" at the meeting. This I cannot do. I cannot, even for the love I bear to the Society, and my desire to promote its best interests, give up my business for the time necessary for a journey to London. I have heavy work in hand, and no one of sufficient confidence I can leave in trust of my affairs. If I could find any one who would take my place for a day or two, I should not at all grudge the eight or ten pounds which it would cost me to travel up to London and back, including the usual hotel bills, &c. Do you not think that the voting papers of *bona fide* members should be receivable by post?—Yours truly,

A BONA FIDE MEMBER IN THE NORTH.

[The existing laws are silent on the subject of proxy voting; and although the adoption of proxy voting in the absence of any provision on the subject would not be without precedent, the Council, it appears, hesitate to adopt a new course at such a time, especially as such a tendency to misestimate their motives has been manifested in some quarters. Those interested in the question should see that in the revised code of rules provision is made for all members recording their votes, whether resident in town or country.—Ed.]



## Proceedings of Societies.

### LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

The monthly meeting of this Association was held on Tuesday evening, the 27th ult., at the Free Public Library, William Brown Street, Mr. R. C. Johnson in the chair.

The minutes of the last meeting were read and confirmed, and the newly elected President, Mr. P. Mawdsley, then entered on the duties of his office.

The PRESIDENT apologised to the members for not having prepared for them the usual address, but, as there was sufficient business for the evening, no doubt they would excuse him.

The Rev. Usher B. Miles was elected a member of the Association.

A vote of thanks was passed to Mr. G. W. Wilson, of Aberdeen, for his kindness in lending his negative, "The Path by the Loch," for the purpose of an autotype enlargement for the presentation print.

Mr. H. GREENWOOD sent for inspection some exceedingly interesting specimens of minute Dallastype printing, and an extract from a communication received from Mr. J. T. Taylor, explanatory of the method by which he (Mr. Taylor) had obtained similar results, was read by the Secretary.

Mr. J. A. FORREST presented to the Association a pair of Edwards's combination printing-frames, for which he received a hearty vote of thanks. He (Mr. Forrest) thought that the Association should possess a variety of apparatus, &c., for the use of the members, especially such things as all might be disposed to use occasionally, but which, by reason of their being too costly, individual members did not care to purchase for themselves.

After some discussion the council were requested to take the matter into consideration.

Mr. W. HARDING WARNER then exhibited and explained the method of using his ingenious camera tripod stand, with the additions for copying, &c. The stand was examined with much interest, Mr. Warner kindly giving all information respecting it, so that several of the members might have similar ones made for themselves. He (Mr. Warner) mentioned that in taking interiors there was often a difficulty in preventing the legs of the tripod from slipping on the polished marble pavement; but by inserting the points of the tripod in three common bungs, this danger was avoided.

Mr. O. R. GREEN presented to the Society's album a number of beautiful views which he had collected in America. Many of them had been taken by Mr. E. Wallace, jun., Secretary of the Philadelphia Photographic Society, and some by Mr. Jackson, Photographer to the U.S. Government Expedition to Colorado.

Mr. ATKINS exhibited a number of transparencies for the stereoscope, and an enlargement on opal glass, taken by the new "emulsion-without-washing" process, invented by Mr. W. B. Bolton. Each plate had been timed from instantaneous to six seconds' exposure, and the results gave evidence of the rapidity and excellence of the process. The transparencies were remarkably clean, and free from spots or pinholes. Mr. Atkins said he had seen Mr. Bolton prepare and dry twelve stereo. plates in seventeen minutes.

After some remarks in their favour by the president, a desire was expressed that some negatives should be obtained by the process, and exhibited at the next meeting.

Mr. O. R. GREEN's prizes were awarded to Mr. A. Tyrer for the best six 12 x 10 dry-plate negatives, and to the Rev. J. D. Riley for the best twelve negatives, size 8 x 5 and under. All the negatives were taken by the collodio-bromide process. Mr. Keith and Mr. Warner acted as judges.

The PRESIDENT developed before the members two negatives by the gelatino-bromide process, and the meeting was shortly afterwards adjourned.

## Talk in the Studio.

**PRINTING IN COLOURS.**—Mr. F. J. Duck sends us the following method of printing in various coloured pigments:—"A piece of mica is spread upon the face of the negative, turned over the edge, and fastened at the back to keep it in its place. Then the various colours of the view, mixed with gelatine and bichromate, are spread upon the top of the mica in their proper places, and, when dry, exposed to light through the negative long enough to obtain a print; then developed with warm water."

## To Correspondents.

**W. ANDREWS.**—It is quite impossible to offer any opinion as to which is the best tent for out-door work. Much depends on the size of plates, much on the extent of the journeys, much on personal taste and habit. Almost every tent which has been devised has its advocates, and has been declared, by some of them, the best possible for some kind of work. We have given descriptions of many, from which our readers can select. Some photographers object to work with the head in the tent, and use a box with sleeves; others dislike the limited power of manipulation which sleeves permit, and do not object to work with the head in the tent or box. You will find an interesting article on the subject in our YEAR-BOOK for 1873, by Mr. Hudson, who has had considerable experience with different forms. 2. The box tent to which you refer is very excellent, and is used by many good men. Some, the best men, do first-class work in the simplest possible of tents, drapery supported by a central pole. 3. We gave all the particulars we received. A low lean-to roof with side light continued, the whole facing north, will give you a very simple and rapid studio.

**SOLOMON'S LAMP.**—Magnesium ribbon going out is generally due to some imperfection in the metal at that point. 2. Developed enlargements have generally a tendency to be grey and somewhat in the paper. Much depends on the quality of the paper. A hard English paper will generally give more brilliant images, and of warmer tone, than the French and German papers. Full exposure and rapid development are favourable to surface, vigour, and warmth of tone.

**VOTING PAPER.**—The balloting papers which will be sent out by the Secretary of the Photographic Society will not permit country members to vote unless they attend personally. It is to be hoped that in any new rules provisions of a more equitable arrangement will be made. Members only who have paid their subscriptions for the current year can legally be permitted to vote; but that does not, as you imagine, give any facilities to those who are several years in arrears to vote by paying one guinea for the present year, inasmuch as any payment they might tender could only be applied to the clearing off of arrears, a receipt for the current year only being given when all past arrears are paid.

**SUNDAY PHOTOGRAPHY.**—W. Colquhoun, of Alexandria, N.B., reminds us of his testimony some time ago to the fact that hard application to photography did not injure health. He now wishes to add that he scrupulously refrains from work on the first day of the week. No question can possibly arise as to the value of the seventh day's rest, and the majority of photographers doubtless scrupulously observe that rest; but, as we have before said, we cannot discuss the religious obligations of the Sabbath in these pages.

**TROUBLED.**—We have devoted several articles recently to the consideration of the minute yellow spots, some of the causes still eluding investigation. Those in the print you send seem to proceed from the paper.

**AN OLD SUBSCRIBER.**—You will find Albert's specification in our YEAR-BOOK just issued, and many articles on analogous processes in recent numbers of the NEWS and last year's volume. We have, during the last five years, published so many scores of articles on the subject, that it would be a serious task to indicate all the numbers, and many of them are now out of print. In the YEAR-BOOKS for 1870, 1871, and 1872 you will find articles. Crystallization is due to the use of excess of bichromate.

**KINWOOD.**—The simplest plan for your purpose, and one involving the least trouble, will consist in obtaining dry plates ready for use, which may be developed at leisure. You will find announcements in our advertising columns.

**KNOW-NOTHING.**—We cannot recommend special lenses or makers in this column. You will find information in our advertising columns. 2. The photograph you enclose can be registered. Send details, with eighteen stamps, to our publisher, who will get it registered for you. Each different position must be registered. You undoubtedly have a claim to the copyright, and no one can legally copy the picture; but any one else may, if opportunity serve, photograph the same thing.

**DAVIES.**—You will find full information as to where sheet gelatine may be obtained on page 139 of our last volume; the number is that for March 21st, 1873. Messrs. Sanson and Co., Thornhill Square, London, N., manufacture it.

**J. E. P.**—We never tried the use of benzoline in producing matt varnishes. It is not the same as benzole. The only mode in which you can ascertain will be by trying. You will find excellent instructions for making such varnish in our YEAR-BOOK for 1873, by Mr. Alfred Hughes.

**BENJAMIN.**—The proportion of water in a toning bath chiefly affects the rapidity of the toning. From five ounces to ten ounces to a grain of chloride of gold may be used. The proportion of lime water to be used is just as the formula describes: sufficient to neutralize any acid in the chloride of gold.

Several Correspondents in our next.



## The Photographic News, February 13, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHING IN GOVERNMENT OFFICES—A STATUE FOR NICEPHORE NIEPCE—ENAMELS—THE ELECTIONS—GELATINE, ALBUMEN, AND COLLODION.

*Photography in Government Offices.*—It is gratifying to find that the Government of almost every civilized State has adopted photography in their printing offices, in some form or other, and this fully acknowledges the great services the art can render in the production of printed matter of all kinds. Even in the Colonial offices in Australia and Canada, photo-mechanical printing is largely resorted to, while in the Topographical Ordnance, and State Paper Offices of England, France, Austria, Russia, Belgium, Portugal and America, and, we think, also, in Prussia, the camera has an allotted task to fulfil. The reproduction of ancient MS. and autograph writings is an important branch; but the main use of mechanical photography, in most countries, seems to be the copying of maps, which are prepared from one and the same design on different scales. Topographical photography is, indeed, just now, very widely practised.

*A Statue for Nicéphore Niepce.*—Some years ago there was to be seen in the Museum of Chalons-sur-Saône a model of a monument to be erected in that town. It was a design for a full-length statue of Nicéphore Niepce, one of the inventors of photography, whom the townsmen of Chalons desired to honour by setting up a picture of him in his birthplace. But up to the present time we have heard no more of the promised structure, and it is to be feared that the question, if not altogether forgotten, has been, at any rate, overlooked. It is to be hoped such is not the case, for the erection of a memento of this kind would do very much towards bringing forward Niepce's name, and giving it the place of honour it should occupy in the memory of his countrymen, a position which for some years past has been placed in great jeopardy.

*Enamels.*—A question has lately been put, why are not photographic enamels more largely produced than is at present the case?—the beauty and permanence of such photographs are admitted on every hand, and the manner of producing them has now been openly published. This, of course, is true enough, but the production of pictures on enamel is, unfortunately, not so easy of accomplishment as other photographic printing. An acquaintance with the process is but very little towards it, for the work not only requires delicate and practised manipulation, but when success is achieved in this respect, there remains the critical and very risky operation of burning in the result. Indeed, until the picture is perfectly finished, one cannot be at all sure of the result of one's labours, whether success or failure will crown one's efforts. This uncertainty seems, indeed, inherent to the process, in a great degree, and for this reason photographic enamels can never become very common, a circumstance which, to many, is a subject for congratulation.

*The Elections.*—It may be interesting to know that among the successful candidates there are two gentlemen who are well known as accomplished photographers. At Wigan, Lord Lindsay succeeded in attaining a position at the head of the poll, having come forward but a short time previously to the election as a supporter of Mr. Disraeli; while in Herefordshire, we find Major Peploe returned, who is also an advocate on Conservative principles. Both these gentlemen are well known in the photographic world, Lord Lindsay as a clever astronomical photographer, who is to take a leading part in conducting the operations for the observation of Venus, and whose fine pictures of the last solar eclipse will still be fresh in the remembrance of all. Science has, indeed, gained an energetic supporter in the House of Commons by the

election of Lord Lindsay. Major Peploe, again, has been some time past a regular exhibitor at the annual exhibitions of the Photographic Society, where he has distinguished himself as a very capable landscape photographer.

*Gelatine, Albumen, and Collodion.*—It is very singular how, in photographic manipulations, the changes are continually being rung upon these three substances, and scarcely any other. Whether it is a question of producing clichés in the camera, or producing prints from negatives, one of these three substances is sure to be chosen as a vehicle for the photographic image. Other substances have been tried in turn, such as silk dissolved in hydrochloric acid, gums of a special nature, bitumens, and such like, but these have had but comparatively little application. Collodion, albumen, and gelatine, are used indiscriminately in the production of negatives for carrying the sensitive salts; and although the last-named has, till now, been used but very little, still there seems a prospect of gelatino-bromide plates becoming popular, if the claims put forward for gelatine emulsions are shown to be well-founded. It is the same in the printing processes, but, in this case, the gelatine, which is used least for the preparation of negatives, is employed most frequently, and collodion, again, which is the main support of negative work, is rarely employed for printing. For not only does gelatine enter into the constitution of carbon prints, but is an important element in every mechanical printing process one can think of: in Woodburytype, Lichtdruck, Heliotype, Photo-lithography, as well as metallic engraving methods, where it is employed for covering up the reserves while the rest of the plate is etched with acid. In modern processes, indeed, which are fast attaining a permanent footing, gelatine is universally employed together with the bichromates, which are thus every day usurping the place of silver. Everybody knows, too, how extensively albumen is employed in the silver printing process, and paper spread with collodion also receives some employment. But we seldom employ any other vehicle except in plain paper printing, where arrowroot, algin, and shellac are occasionally resorted to. One seems to have discovered in the early days of photography how very suitable these substances were for photographic manipulation, and since that time all the efforts made by experimenters have not been successful in discovering a fourth body possessed of qualifications in any way equal to the three first suggested.

### AMERICAN CORRESPONDENCE.

WHAT THE PAPERS SAY—SULPHATE OF SILVER PINHOLES.

*What the Papers Say.*—I notice, especially when you are holding your annual exhibitions, that you are very susceptible to what the papers say about you; and I confess we are too, for, as much as it helps along in the arts and the sciences, photography seldom gets award of real genuine praise from the newspapers, and for that reason, when it does, I feel that we should acknowledge it, so I add a few extracts from an editorial which recently appeared in Mr. Geo. W. Child's paper, the *Public Ledger* of this city. It is headed "Good for the Photographers," and says:—

"The *Philadelphia Photographer*, which has just completed the tenth year of its existence (growing with the growth of the art it illustrates), has given some advice to photographers that should be echoed through all trades and professions. It says: 'What shall I get up for the Centennial? is a query which every photographer should ask himself now day by day, and prepare for a substantial answer. The Centennial Exhibition is not to be an ordinary one, such as we have each year under the auspices of the National Photographic Association, but a very extraordinary one, where your best work should be shown in elegant style. The Centennial Commission are disposed to treat photographers very favourably, and to have a hall especially constructed for the art



of photography. This being the case, let us not fail to do our best, including liberal subscriptions to the stock.'

"Few departments of the exhibition can be made of greater public interest than that devoted to specimens of photography. As an art, it is much younger even than the youthful nation among whose industries its best results will be exhibited; and, although it now takes rank with those arts that are older than the nation, it has before it a future to which its present position is but a step. The public obtains some notion of the advances made in photography by the gradual improvement in the pictures produced by this process, but does not realize that the process itself has been almost revolutionized within the last ten years, and that to-day equally good pictures are made by modes of procedure based on two opposing principles. In some of its features photography is yet a mystery to those who practise it with the best effects, but the mystery is gradually being solved under well disciplined agencies, such as societies, annual conventions and exhibitions, and monthly magazines entirely devoted to the discussion of problems of photography in its relation to art, optics, and chemistry. Probably the best agency is the National Association, which holds annual conventions, where papers are read and discussed, and the pictures made by different processes are exhibited. At the last convention of this Association, discussions were held, which curiously illustrated the fact that the 'science' involved in photography is no more exact than some of its more pretentious sisters. One set of photographers, it appears, used a bath for negative plates, containing a large proportion of acid and a small proportion of silver, and another set used a bath strong in silver, but only slightly acid. Each set produced good pictures, while the conservatives could see no advantage in using either formula of the radicals, as they by a medium course also produced good pictures. There was a similar disagreement on the subject of skylights and on many other questions involved in the art. All of these disputed points must be settled before photography can make a near approach to perfection, and the fact that they remain disputed, while such splendid specimens of the art are made as we daily see in shop windows, suggests the hope that in some period of the future 'the sun artist' will give us pictures as much superior to those of to-day, as they in turn are to the prints with which the town was satisfied ten years ago. Such results are ordinarily the slow outgrowth of patient study and experiment on the part of a few, but in photography, through the medium of societies, magazines, and exhibitions, the humblest member of the craft contributes something to the general fund of information, and aids in new discoveries.

"The work of the photographic chemist does not consist alone in the production of pictures artistically true in tone through the medium of chemicals, for photography has become of late the handmaid of the higher sciences, and the results of nearly every discovery in photographic chemistry have been utilized in some practical way for the benefit of mankind. Photography has a still greater value as a cultivator of art tastes, for it puts in the hands of the poorer classes exact representations of beautiful scenery, or exact copies of fine works of art, instead of the vulgar prints and coarse danks that were common twenty years ago. Such an art is deserving of recognition in the exhibition of a nation where it has obtained, possibly, its greatest development.

*Sulphate of Silver Pinholes.*—Sulphate of silver, as we all know, is one of the most aggravating causes of pinholes. Mr. John M. Blake, whose paper on the use of bichromate I sent you a short time ago, has also been writing on this subject, and I send you what he says, hoping it will help many a one out of trouble:—

"Crystals of sulphate of silver often form during development when working with a strong bath (say sixty grains) and developing with sulphate of iron. The film may come out of the bath in perfect condition; but if we develop the plate, and then drain and blow upon the surface to remove still more of the solution, it will be seen that the film has a velvety look. This is caused by a multitude of small crystals of sulphate of silver. They will be removed by solution in less than a minute, if the plate is washed with water. For this reason they are quite likely to escape notice. The effect produced by the formation of these crystals is to cover up a portion of the film under each of them, and thus hinder the deposit. Pinholes are left on the solution of the crystals, and the general effect is to give a peculiar, coarse look to the image. Pinholes of this kind have not the character of a distinct puncture entirely through the film, since the growth

of the crystals, in the high lights at least, began after development had commenced. As proof that these crystals are sulphate of silver, it may be mentioned that their solubility in water is identical with that salt. Also a simple saturated solution of sulphate of silver does not act upon them. They form, as well, on a plain collodion film that has been soaked in the strong silver bath. If, while working a bath with which ordinary sulphate of iron developer constantly and abundantly gives these crystals, we substitute proto-nitrate of iron, or pyrogallol developer, the crystals cease to form; but simple sulphate of potash or of ammonia will produce them fully as well as sulphate of iron.

"The crystals by sulphate of potash are larger in size than those produced when sulphate of iron is used, and their microscopic character is also somewhat different. Those produced by sulphate of ammonia also have a character peculiar to themselves. Certain sulphates appear to produce these crystals out of proportion to the amount of sulphuric acid which they contain. Probably this is not due to the formation of a double sulphate of silver, since a crystal started with sulphate of iron solution was seen under the microscope to continue its growth in mixed solutions of sulphate of potash and nitrate of silver. In explanation, double salts are often less soluble than their two constituents, and a crystal of simple sulphate of silver would not be built upon by a double salt. If the crystal by sulphate of iron was a double salt to begin with—and this is possible—then super-crystallization might occur, and a greater difference in the facility of production of pinhole crystals by different sulphates than actually exists would be quite consistent.

"We will now add the results of some trials with several sulphates that are frequently added to the sulphate of iron developer. It must be understood that the results will vary within certain limits, according to the habit in flowing the developer, and the consequent amount of dilution or loss of silver nitrate; also upon the amount of exposure, and consequent absorption of silver in forming the image. The examples given were at the maximum; plain collodion films were used, soaked in the different baths; temperature, 60° to 70° F.

"A solution of sulphate of iron, 100 grains to the ounce, gave no sulphate of silver crystals on development with a film taken from a 40-grain silver bath; on one from a 45-grain bath a few crystals formed in the thick edge of the film; a 55-grain bath gave them abundantly; a 50-grain iron solution behaved the same as the 100-grain; a 25-grain iron gave none with a 45-grain bath, a very few with a 50-grain, but abundantly with a 60-grain bath; a 15-grain iron solution gave none with a 60-grain, a few with a 65-grain, and more with a 72-grain bath.

"A sulphate of potash solution, 30 grains to the ounce, gave a few crystals with a 40-grain silver bath, and a 20-grain potash also a few with the same bath; a 13-grain potash gave none with a 55-grain silver, but a few with a 60-grain bath; a 9-grain potash gave a few with a 66-grain silver.

"A 20-grain sulphate of ammonia solution gave the crystals with a 40-grain silver; a 13-grain ammonia gave a few with a 45-grain silver, and abundantly with a 60-grain silver; a 9-grain ammonia gave a few with a 55-grain silver.

"A 40-grain sulphate of copper gave a few crystals with a 40-grain silver, and abundantly with a 60-grain; a 20-grain copper gave a few with a 50-grain, and abundantly with a 60-grain silver; a 13-grain copper gave none with a 60-grain, but gave them with a 66-grain silver.

"A 40-grain double sulphate of iron and ammonia gave a few crystals on the thick part of the film with a 45-grain silver, and plenty with a 50-grain; a 20-grain double sulphate solution gave none with a 55-grain bath, but abundantly with a 60-grain.

"An appreciable interval elapses after the mixing of the solutions on the plate before the crystals begin to form, and if the development of an image commences and goes on vigorously during the interval, the trouble may not appear. Furthermore, it will be seen from the results of experiments given above, that if we confine ourselves to the strength of solutions that general experience has shown to give the best and most uniform results with bromo-iodized collodion, there will be no danger of the formation of these pinholes; also that a limit is put to the strength of solutions we may wish to employ for the purpose of forcing up an image with a very short exposure, excepting what might be gained by heating the developer to increase the solubility of the sulphate of silver."

(To be continued.)



### TRANSPARENT POSITIVES FOR ENLARGEMENT.

THE following method of producing a transparent positive from which to obtain an enlarged negative gives singularly fine results. We extract it from the useful little manual just issued by Mr. Solomon, "Photography in Four Lessons."

"Assuming that a good small negative has been obtained (one which is sharp, delicate, and full of half-tone), the most important aid in securing a fine enlarged negative from it consists in a method of producing a good and suitable transparent positive from it. A good transparent positive for this purpose differs in some essential respects from a good transparency for the stereoscope or magic lantern. Of the latter it is a good test that it shall look well as a picture when laid down on a piece of white paper, being very clear in the lights, and not over-loaded with deposit in the shadows. A first condition in the transparency for enlargement, after good definition, is, it should not be suitable for examination in the way described: its chief characteristic should be the possession of full detail and sufficient deposit in every part, without a trace of bare glass except in some minute points of extreme high light. Whilst it is important that the transparency should be covered with well made out detail, it is equally important that the deposit should be of the most delicate character, as free from texture and granulation as possible. The image of an ordinary collodion transparency developed with iron may, for instance, appear to the eye delicate and fine, but it will be found, when magnified in enlargement, to be coarse and unsatisfactory, the texture of the film and that of the deposit of silver as reduced by the iron developer presenting a rough, granular appearance, which will be very offensive in the print from the enlarged negative. This subject has received considerable attention of late, and the necessities of the case are much better understood by photographers than formerly; but how best to meet them still remains a question, the best methods having been kept secret. The formula we are about to lay before the reader has not been published before, and is one of the best in existence. The image, being obtained on the textureless film presented by albumen, is free from the objections which a simple collodion film presents, and the homogeneous character of the deposit of silver produced by pyrogallic acid development prevents anything like granulation, whilst its non-actinic colour gives it especial value in securing sufficient vigour without over-intensification. By means of the following formula a transparency may be produced giving the utmost delicacy, modelling, and brilliancy, in the enlarged negative. The process, as will be seen, is a modification of the collodio-albumen process, and the plates are intended for contact printing. Take—

Albumen ... ..	12 ounces
beat well, and allow to stand a few hours. Then add:	
Water ... ..	2 drachms
Acetic acid ... ..	48 minims
Shake well, and filter. Then add:—	
Water ... ..	12 drachms
Iodide of ammonia ... ..	72 grains
Bromide of ammonia ... ..	12 grains
Ammonia forte ... ..	1 drachm

Take a powdery iodized collodion, and pour on a well-cleaned piece of plate glass in the usual way, after which put it into water until all greasiness disappears, and wash well under the tap. Now pour on a small quantity of albumen to flow away the surface water on the collodion, and throw it away; then flow from the thumb and opposite side, fresh albumen, repeating this two or three times, taking care not to return the albumen in a wave back on the plate, or it will give a mark. When the albumen has flowed over the plate as described, put it up to dry, and

when dry sensitize, rinse, dry, and pack away for use when wanted.

Sensitizer.				
Water ... ..	...	...	...	12 ounces
Silver ... ..	...	...	...	1 ounce
Acetic acid ... ..	...	...	...	1 "

Sensitize in ordinary temperature one minute, or hot weather forty seconds. When the plate is taken from the silver bath, slightly wash or rinse with distilled water, and put it on end or in one corner to dry. Expose under the negative for a few seconds to good daylight. Experience will be the best guide as to time of exposure, which will vary with the condition of the light and the opacity of the negative.

"To develop take—

Pyro ... ..	15 grains
Acetic acid... ..	2 drachms
Water ... ..	8 ounces

In winter warm the developer.

If the exposure has been sufficient, a well modelled transparency covered with detail, but not overloaded with deposit, will be secured. Fix with—

Hypo ... ..	6 ounces
Water ... ..	28 "

"The transparency may, after washing and drying, be used in its present state, or its brilliancy may be increased by toning as follows:—Dissolve 15 grains gold in 2 ounces of water, and pour gradually the gold into the hypo, shaking it or stirring it whilst pouring in the gold.

"To keep the hypo and gold fixing and toning bath clear and properly neutral, put in a nut of hard chalk. In winter, warm the pyrogallic solution. If a bromo-iodized collodion be used as a substratum, a backing will be necessary to prevent halation. Burnt sienna finely ground in gum-water will answer this purpose."

### GERMAN CORRESPONDENCE.

BY DR. VOEL.

MICRO-PHOTOGRAPHIC STEREO SLIDES—THE ABSORPTION OF ACTINIC RAYS IN THE ATMOSPHERE—EFFECT OF LENSES OF STRONG OR FEEDLE LIGHT ON THE BRILLIANCY OF THE PICTURE—DULL WEATHER IN GERMANY.

THE attention of the public has recently been directed to a special kind of stereoscopic pictures, but, so far, only a few of them have been published. I refer to stereoscopic views of microscopic objects. Micro-photographs are plentiful, and as magic-lantern slides they form an article of trade; but stereoscopic pictures of microscopic objects are much more instructive, for from them we learn what is near and what is far, what is hollow and what is elevated. Such stereoscopic effects are furnished by the binocular microscope, an invention of your countryman, Biddle (1853), for the naked eye. But, so far, binocular microscopes are very expensive, and only in the hands of a few. It is easy, however, to make these stereoscopic pictures with any ordinary microscope. It is done by skilfully blending the object lens of the microscope. Years ago I called attention to the fact that a very large lens—for instance, a portrait lens—yielded a picture quite different from the one taken with a lens of smaller opening. The right half of the lens takes in more of the right side of the person, and the left half of the lens more of the left side of the person. If we now cover one-half of the lens, and take two pictures, one with the right half and the other with the left half, the two together will give a stereoscopic effect. We can employ the same principle to make microscopic pictures. The lenses of the microscope are, of course, very small, but still they are much larger than the object, which is a mere speck; in fact, they are, when compared with the object, still too large. If we stop off, first the one half and next the other half of the lens, and

take a picture, we obtain a very complete stereoscopic effect; and Dr. Frith has made, in this manner, excellent micro-photographs for the stereoscope.

Lately I have made a number of spectral observations, which have furnished me important data on the changes of the chemical light intensity in the atmosphere. It has been known for some time that the chemical intensity of the light of the sun becomes more feeble in proportion as the sun approaches the horizon, and that watery vapours decrease the chemical intensity. There are, however, other circumstances which affect the transparency of the atmosphere. I noticed this when making my experiments with bromide of silver plates. Sometimes, with a perfectly clear sky, I obtained only a very limited picture of the spectrum; and at other times, when the atmosphere was less clear, the picture was much more complete. For instance, on October 7th, at 2 o'clock p.m., I obtained, with ten minutes' exposure, a picture extending from violet to red, while on October 17th the action extended only to near the yellow, while at the same time the sensitiveness to ultra-violet was greater. On the 18th of October violet had no effect at all on the bromide of silver, while red acted considerably. On October 29th the action of violet was still more feeble, while that of red increased. One day later, the photographic action of the violet had increased again, red having decreased correspondingly. In short, you see how fluctuation in the intensity of the chemically active rays occurs, of which the eye perceives nothing; and it is only to be regretted that we do not possess a reliable instrument—a photometer—with which we can measure these vibrations. The chemical photometers which have been constructed so far determine only the combined effect of the solar light, but make no distinction in the action of the different colours, which, as my experiments have demonstrated, is very variable. So far, the violet, the blue, and the green rays—or, in other words, the rays of certain colours—have proved photographically practicable; a photometer should therefore fix the light intensity of these colours, in order to become practically useful.

In your August number, page 227, I wrote to you concerning the action of objectives, either feeble or strong in light. The belief is very widespread that the former, even with a correspondingly longer time of exposure, do not yield as brilliant pictures as the latter. I found that this belief was erroneous, and the reason of it is that with long exposure a considerable portion of the silver solution drips from the plate, and hence the developed picture appears weaker than a plate which is developed after a short exposure, and where the larger portion of the silver bath adheres to the plate, and hence, on being developed, yields a more brilliant picture. According to my opinion it is not the objective of great light intensity which yields the brilliant picture. Our friend Simpson has his doubts about this view. He maintains that the greater brilliancy of pictures taken with light, strong lenses has been established on dry plates, on which a dripping of the silver solution is out of the question. I admit that my friend Simpson is right in this particular (*i. e.*, that light, strong objectives yield more brilliant pictures with dry plates than objectives feeble in light), but I dispute the conclusion drawn from this, namely, that the light intensity of the instrument is the direct cause. So far as I know, nobody has made comparative experiments (*i. e.*, worked with two instruments simultaneously), and fixed the time of exposure reverse to the light intensity of the instrument. Experiments with instruments the light intensity of which is exactly known can only decide this question. The experience that objectives feeble in light yield weaker pictures on dry plates, I explain quite differently. Experienced dry-plate workers know very well that it is better to take the time of exposure a little too long than too short. This rule they employ principally with weak objectives. They expose, fearing under-exposure, rather too long than too short,

and the results are feeble pictures. The cause is, therefore, an individual one, and the instrument is not to blame, but rather the worker, who, generally, does not know the exact light intensity of his objective. That this is actually the case I have recently established practically. I took three tannin plates, and exposed them in a stereoscopic camera, the opening of one of the objectives being stopped off in such a manner that its light intensity was twelve times less than the other, and I exposed the plate under the "stopped off" lens twelve times longer. The result was that the two negatives developed with equal rapidity, and the brilliancy of the two pictures was absolutely equal. I cannot, therefore, change my former opinion, and insist upon what I have said before.

Everyone here is complaining about the weather; for two weeks we have not seen the sun. The precious Christmas days, which generally bring numberless orders, have passed by without bringing any business. Some photographers have taken medallion cartes by lamplight with tolerably good results.—*Philadelphia Photographer.*

#### PRACTICAL HINTS BY A LANDSCAPE PHOTOGRAPHER.

THE old story: "I really have no secrets." This is the preliminary remark of Mr. Frank Good (whose charming landscapes everybody knows) in communicating a few practical hints to Mr. Badeau in *Anthony's Bulletin*. We proceed to give a few of those hints, which our readers will find worth noting, although they are not secrets. He begins by giving two or three bits of axiomatic advice as follows:—

"Never study economy in lenses, apparatus, &c.

"Never attempt any subject if the light be not suitable. As, however good the picture (or rather I should say negative) may appear, it always disappoints one afterwards.

"Never focus carelessly. Very much depends on this. As a rule it is a good plan to focus some central object in the view. (*N.B.* All these observations are for landscape photography.) For interiors especially this is a most important matter, and sometimes difficult. It is a good dodge to fasten up some large type—the heading of a newspaper, for instance—in a central position. This gives one a good chance of getting a sharp picture.

"Never use any but the best patent plate, which, by-the-bye, do not clean with anything but alcohol, as tripoli, &c., only adds another evil to the bath.

"Never waste time in doctoring an old bath. Make a new one, and this as simply as possible, thirty-five grains of silver to each ounce of water; add a little old collodion, filter, and it is ready for immediate use. (I have always found that the ordinary nitrate of silver answers every purpose.)

"Never, after securing one good negative, leave the ground till you have tried for a duplicate, which is often better.

"The greatest secret in the negative process, to my mind, is a properly-timed exposure; herein lies the great art of photography, and makes the difference between a picture and a photograph. If you are required to drag out your child, he only looks sullen when he appears.

"Now, perhaps many of your readers may exclaim, There is nothing new in all this: nor is there. And some may say, That is just what I do. To these I say, keep on doing so, and success must follow. Now for a few words on printing, and I shall have had my say.

"Many photographers seem to think when a good negative is turned out that it must of necessity give good prints. To my thinking this does not follow, for the same care that was required for its production is still necessary to produce the best results on paper; and a photographer who does not occasionally print can scarcely expect or be expected to get all the qualities in a negative for a choice printer. I give as much attention to this branch as to



negatives, and consider it a cruel thing to leave such nice work to the care of boys and girls."

Having enforced "these few precepts," he proceeds to the subject of printing, which he regards as all-important. He says:—

"Good paper is essential. The Saxe is our favourite. This with a thirty-grain bath gives brilliant prints. The sensitizing should be done in a warm room, and after the usual floating time (three and a-half minutes) hang up to drain. Before another sheet is added, add two drachms of a solution of nitrate of silver (strength one drachm to the ounce). This supplies the waste; and, after the addition, stir well by passing a plate of glass backwards and forwards. This being done carefully produces no bubbles, and gives each sheet of paper fair play, the last dipped being equal to the first. Dry off before the fire, and stow away in a large blotting book made for the purpose. This flattens and dries up all damp corners, and keeps the paper in excellent condition for printing. Prints upon paper prepared carefully lose little in toning. Before doing this, wash carefully by passing through three changes of water (soft water, if procurable) singly; and lastly, before toning, sponge each print. This removes any surface chloride, makes them tone readily, and keeps the bath in good order. For general work no bath that I have tried works so well as the old soda bath prepared as follows:—To each grain of solution of chloride of gold add ten grains of carbonate of soda (of course adding the gold to the soda), which is first dissolved in a little water. Shake well at intervals during twenty minutes to half an hour, and add sufficient water to make up enough for the toning bath. Half a grain of chloride of gold tones one whole sheet of paper.

"This bath in winter can be used for a week or more by adding more gold prepared as above. I may mention here that the silver bath, if hardly worked, should be boiled down nearly to dryness once a week, and a pint or so of fresh solution added according to quantity, together with a little carbonate of soda to correct acidity. Prints toned as I have stated lose scarcely anything in the hypo solution. This should always be fresh and strong, the prints being placed in one at a time; when all are in they should be constantly turned, and after they have remained half an hour, drain out the hypo, and pass one by one into a large vessel of water. After one or two changes, to get rid of as much hypo as possible, proceed to roll on a glass slab with a heavy iron cylinder covered with flexible indiarubber. This squeezes or wrings them, which does more good than hours, or even days, of soaking. Wash still in more changes of water, warm and cold, roll again, and hang up to dry upon rods of wood made for the purpose, varnished with shellac varnish; lastly, iron them, when dry, one upon the other, which is the quickest manner of flattening them.

"I fancy prints so prepared are permanent. All this reads troublesome, but in practice it will, I think, become quite as easy as any other method. Never send out a bad print. Consider each print as an advertisement of your beautiful art. Endeavour to make each picture perfect."

### COMBINATION PICTURES.

BY J. M. YOUNG.

OF course all pictures are, or ought to be, combination pictures. Art rules should be followed in every photograph with the object of making it a picture; but what I am to say a few words about are pictures printed from more than one negative. This class of photograph has been objected to by some of our art critics as beyond the province of photography—degrading to its truthful character. Yet I believe, if well understood, the art of combination in photography is a legitimate power in the hands of the photographer; and with this view I submit the following method of working, which will be found a source

of very great pleasure, and by no means a despicable source of profit to those who may give it a thorough trial. Let me say, however, that I do not pretend to teach anything new. I merely give what I have picked up and pieced together into a system satisfactory enough to myself.

*The First Negative.*—This contains the foreground, which should be made up of natural objects (*papier mache*, as painted stumps, rocks, &c., will not do). Do not crowd too much into the picture—merely sufficient to give or support a character to your figure. (2) The figure. As to this I can only say, let it harmonize with the character you wish it to represent. If rustic, a pair of elastic side boots or a magnificent chignon had better be left in the dressing-room.

*The Second Negative* should contain the middle distance, foliage, mountains, or other scene suitable to the figure. Be careful as to point of view, composition of lines, lighting, &c.

*The Third Negative.*—The sky. Any fine clouds effects should be secured when the opportunity occurs. The same caution as to the lighting applies to the printing of the sky.

*The Combination.*—The first negative, with figure and foreground, may be taken against a grey or slate screen graduated towards the top to nearly white. In my practice I prefer having the screen quite plain—i. e., without any gradation—and of a darkish slate colour from top to bottom, the gradation being easily got in printing by judicious masking. A great many different effects may be got in this way, such as mist rising from a valley, snow on the mountain sides, &c., &c., to suit the subject or vary the picture, and the practice of this will greatly add to the pleasure of the work. Having chosen the suitable negative for your background, draw the outline of your figure and foreground roughly in any opaque ink, or colour, on the glass side of the landscape negative, and proceed to block out the whole of the objects which might print on to the figure or foreground. When this is done place the print of your figure and foreground in contact with the background negative, seeing that the figure, &c., is properly protected by the rough mask, and print in direct light, not too deeply. All that now remains to be done is to print the sky, to have this, your first effort, complete. Select your cloud negative, and place in contact with your doubly printed proof, protecting figure and background with a rough, movable mask, such as a piece of brown paper torn to something like the outline of your mountains, or other subject forming the background, and print as before.

I only add, beware of spottiness in your composition. Have all in a subdued tone rather than so obtrusive as to quarrel with your subject, the figure, for the greater prominence.—*Photographic Bulletin.*

**SAVING SPILT SILVER SOLUTION.**—A correspondent of our Philadelphia contemporary describes an accident in the operating room, and the mode of dealing with it. He says:—"Just before Christmas, in making up a silver bath the bottom of the bottle came off, by a hard knock, and the silver (two pounds) went on to the dark-room floor. There was pretty lively work for a few minutes mopping it up with towels and any old clothes we could get hold of, and wringing out into an evaporating dish. It was a sorry-looking mess, being a mixture of silver, hypo, iron, and dirt. The young man working for me suggested throwing it down with strips of copper, obtained at the coppersmith's. This was put into the bath and allowed to remain some hours, or until by adding muriatic acid there was no precipitation to the water. Again, this was now washed thoroughly in a good many changes of water, until by adding weakened ammonia there was no longer observed a change to the blue tint. Then, being well drained and put over a heater where there was a chimney to carry off the fumes, a mixture of nitric acid one part to two of water was poured on in sufficient quantity to dissolve the silver. Evaporated and fused, it made as good a bath as 'never was.' Not more than half a pound of silver was lost."

# The Photographic News.

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## DISRUPTION IN THE PHOTOGRAPHIC SOCIETY.

ON Tuesday evening last, through the vote of a special meeting, the Photographic Society of London lost, at one swoop, the whole of its officers. In a society numbering between three and four hundred members, of whom more than two-thirds reside in the country, the vote of twenty-eight town members in a meeting consisting of little over fifty persons—or, to put the naked truth more barely, a majority of six persons—deprived the society of president, vice-presidents, council, treasurer, and secretary, the whole of the twenty-four offices being, for the time, left vacant. The cabal has succeeded: and we wish its promoters joy of their victory. They are, after all, little to be congratulated on an issue which, probably, transcends their ambition, and lays on them a heavy responsibility, a responsibility which, we earnestly hope, for the society's sake, they may be able to sustain without dishonour to themselves, and without loss to the members and to the art which the society has so worthily fostered and represented.

The main facts of the story are briefly told, and may be found more in detail on another page. The special meeting was held, and, unhappily, very sparsely attended. Members generally are not deeply interested in squabbles, and, as we have before said, are apathetic about laws. At any rate, there were insufficient independent members present to affect the voting. The amendment of the council offering harmonious co-operation in reforms was rejected, and in such terms as left the council no alternative, consistent with self-respect, but resigning in a body.

Mr. Hughes proposed the resolutions of the requisitionists in an aggressive speech, devoted less to an exposition of the necessity of a change in the laws than to an impeachment of the council, whom he charged with acting illegally and disrespectfully to the signers of the first requisition. The utter groundlessness of such a charge was clearly and temperately exposed by Mr. White, who, as an experienced lawyer himself, pointed out that the council had no power to act upon a requisition not in accordance with the laws, but showed their readiness to carry out the purposes indicated by offering to co-operate with the signatories in a modification of the laws. It is pretended now that this was regarded as an attempt to shunt the reform. But a fact remains which no railing can remove. Four of the gentlemen styled requisitionists were present when this tender of co-operation with those desirous of reform was agreed on in the council. One of them seconded the motion. All of them voted for it: it was carried in the council without a dissentient vote. Now, the allegation is that these gentlemen reported that the council were obstructive and opposed to reform. We emphatically deny that this was so; and we point to the unanimous

resolution in which these gentlemen joined, as effectually confirming our statement. One of these gentlemen asked of how many the deputation should consist, and the answer was, "as many as the requisitionists chose to appoint—all, if it so pleased them." And this offer of co-operation, and this invitation to meet, is now pronounced to be lack of consideration and respect! This was one of the alleged reasons for declining to accept an amendment from the council.

Another objection was that the proposed committee had no instructions. The truth is that an instruction, as definite as by any possibility could be framed, short of tying the hands of the committee, was given in the preamble to the amendment, which states that the laws can, with advantage, be placed upon a wider basis, that the choice of officers can be more completely placed in the hands of members, and better facility afforded for frequent distribution of offices amongst the members. But this was not sufficient. Any committee appointed was to be hand-tied at the outset, and pledged to maintain certain principles embodied in the two rules which a *junto* had decided, *bongré mal gré*, to force upon the society, a primary principle of these rules being the complete ignoring of upwards of two hundred members of the society non-resident in London. A faint attempt was made to explain that steps might be taken afterwards to give votes to country members. But this is absolutely negatived by the resolutions which it was insisted must form the test principles upon which a committee must work. In the new Law VII. it is distinctly laid down that nomination can only be made by members *present*, and no country member can now take part in the nomination of officers until the rule passed on Tuesday night, and emphatically insisted on for the guidance of any revising committee, be rescinded. At this moment country members have less voice than ever in the affairs of the society of which they form a major part. And unless the committee appointed by the requisitionists are impelled, by the close logic of their opponents, to make some provision for representing country members, in spite of the instruction obstructive to which they are intended to conform, the mass of the society must be left out in the cold, without an interest of any kind to connect them with the body which depends on their support for existence.

Another objection to the council's amendment was, that it suggested that out of nine members, three were to be nominated by the council, six being left in the power of the requisitionists. Mr. Hughes objected to the council wishing to nominate any of the committee, and, with exquisite taste, asked who were the "three dark horses." Leaving at once this flavour of the stable or the turf, we might ask if there was anything unreasonable in supposing that a council of gentlemen, who have for some time been engaged in managing the affairs of the society amid very serious difficulties, should have some special fitness for suggesting three of the most suitable men to assist in revising the rules? These three could only advise, and could in every point be out-voted by the six representing the requisitionists. How far the statement that it was the sole right of the members of the society to nominate a committee was really made in good faith, may be gleaned from the fact that when the requisitionists subsequently appointed a committee, the mover of the resolution suggested that the entire nomination of the members thereof should be left in the hands of Mr. Hughes! This was too serious a violation of appearances, and was over-ruled.

The fourth objection to the amendment was a singularly ingenious one, and to it the requisitionists owe their victory, for we have been informed since, by several who voted with them, that had they not been misled in this matter, they would have voted for the council's amendment. The statement had been circulated that the sentence which directed the committee to be appointed to report to a general meeting, meant an *annual* general meeting, and



that the amendment was simply a subterfuge to put the question aside for twelve months! By what perversion of common sense such a conclusion was arrived at by honest workers in the movement we are at a loss to conceive. In all cases of the kind, when a special meeting is called for a special purpose, it is adjourned from time to time until that purpose is accomplished; and had a committee been appointed, the special meeting of Tuesday night would have been adjourned until a specific time appointed by that meeting to receive the report of the committee it had appointed. There was no other course open, and the council had no other idea. The notion of delaying for twelve months never was, for a moment dreamed of; but if it had been, as the committee was to consist of such an overwhelming majority of the requisitionists, they had the matter in their own hands, and could have decided to report at any time they chose.

But the question was never intended for consideration at the special meeting. It was all cut and dried beforehand by the requisitionists. We have before us the private programme of a meeting held a few days beforehand, deciding how the matter was to be worked. This private programme, printed for the guidance of the opposition, was handed to us by a gentleman who had been deceived by the statement that the amendment meant delay. The arrangement is as cunningly devised as it was successful. The instructions are precise. First, "That the new laws be voted for;" second, "That the amendment be rejected;" third, "That Mr. Hughes's motion for a committee to revise laws be voted for;" fourth, "To vote for the following candidates," giving the names, which will be found in the report of the meeting. A list of names with persons appointed to move and second them, for serving on Mr. Hughes's committee, follow. The programme concludes by earnestly requesting that, to ensure success, all holding it "will vote according to this programme." They were not to go to the meeting to hear the case stated, to listen to explanations, and vote honestly upon the case placed before them; but they were pledged to vote against the council in any circumstances. Thus it will be seen that the proceedings of Tuesday night, the voting on resolutions, and the election of officers by ballot (!) was not the work of the Photographic Society, but the predetermined work of a junto, secret, self-appointed, and irresponsible. It is clear that when proceedings of such a kind are resorted to, any *emende* may succeed, as the council could only proceed by direct open reliance on the direct and open conduct of the members.

The resignation of the council after the expressed and implied want of confidence was simply inevitable, although it evidently took the meeting by surprise. The only requisital which a society can offer a body of officers for the honorary discharge of duties which levy a heavy tax upon them consists in loyal confidence. That confidence withdrawn, men of any self-respect at once tender their offices to the society. The step was inevitable; but we cannot the less regret that the society has suffered a great loss. In the president they have lost a gentleman whom they will not readily replace, either in position, scientific repute, or capacity for the office. Some members of the council they will not easily replace. Among the requisitionists there are some gentlemen of high character, sterling honesty, and great ability. How their judgments have been warped to the approval of a course which seems to be so unfair, so impolitic, and so menacing to the welfare of the society, we will not venture to conjecture. They have now a heavy responsibility, which, as we have said, we devoutly hope they will use wisely, so as to avoid, if possible, the destruction of the society. Brief as is the time which has elapsed, we have heard much talk of resignations. On this point we earnestly conjure members not to act rashly. The society is more important than any set of officers. Its influence has been valuable—may yet be valuable. The future is not as promising as it might

be; but if the members generally are loyal, no permanent injury can arise from a temporary disturbance. The narrow and exclusive rules passed on Tuesday evening have not yet become law, and may not do so. The presence of half-a-dozen more loyal members—the presence of all the members of the council even (for some were unavoidably absent)—would have changed the issue of the evening; and the members of the society generally can at any time, by a little earnest attention to the matter, prevent it falling into the hands of any clique, junto, or cabal. It is surely better to exercise their legitimate power and influence than to leave a society with a noble history and traditions to drift to destruction.

#### MR. CRAWSHAY'S PRIZES.

WE are authorized by Mr. Crawshay to announce that in deference to the strongly expressed wishes of many gentlemen interested in the production of life-size direct photographs, he is willing to reduce the smallest proportion for such heads from seven inches and a-half to seven inches. He would have hesitated in making this modification if he believed any inconvenience could arise therefrom; but as the weather, which has prevailed since his announcement was issued, has been of a character to preclude the prosecution of important photographic work, he feels that no risk exists of negatives having been already produced of the larger size. A formal and detailed announcement of the modification will appear next week.

#### Correspondence.

##### THE MEETING OF THE PHOTOGRAPHIC SOCIETY.

SIR,—I have been informed that in my absence, after leaving the meeting with the council on Tuesday evening last, my name was added to the list of a committee nominated by the requisitionists to reconsider the laws of the Photographic Society. I take the earliest opportunity of declining that honour, and I ask the favour of your columns to give publicity to my refusal to be identified with a disaffection which I entirely disapprove, and with which I have no sympathy.—Yours truly,

W. DE W. ABNEY, Capt. R.E.

DEAR SIR,—Having been informed that after the retirement of the president and council from the meeting last night, it was proposed that I should be placed on the list of a committee appointed, may I ask you to afford me the opportunity of saying that I most decidedly decline to accept such a position. I repudiate entirely the action of the requisitionists, and am sorry that they should have disregarded the wise and prudent counsel of some of the speakers, who, equally anxious with themselves for the welfare of the Photographic Society, desire reform, but dread revolution. I feel that a great mistake has been made, and fear that the result of last night's voting will prove most mischievous.—I am, dear sir, yours truly,

FRANCIS BEDFORD.

326, Camden Road, N., Feb. 11th.

SIR,—It was with feelings of deep regret that I witnessed the late president of our society leave the chair on Tuesday evening, followed, as he was, by the members of the council; although, after the provocation and implied insults to which both he and they had been subjected during the evening, no other course was open to them than to resign.

The organization of the requisitionists—more than the merit of their proposal—enabled them to carry their point at the cost of the disorganization of the society. The motion "that the resignation of the president and council be accepted" was certainly carried by the majority in the meeting, but these, I think I may venture to say, scarcely represent the society generally. However, be this as it may, we have lost our much esteemed president, who has served us ever constantly and faithfully; and I think the least that we can do now is to offer him an expression of our regret at parting with him, and an acknowledgment of our appreciation of the very valuable services he has rendered to the society.

I feel sure that many of our members must entertain similar feelings, and if the idea could be carried out in the shape of a memorial, they would willingly sign it.—I am, yours truly,  
*Strauberry Vale, Finchley, Feb. 12.* ROBERT HAYWARD.

### THE PHOTOGRAPHIC SOCIETY.

SIR,—I beg most respectfully, but earnestly, to protest against the columns of a first-class scientific journal, such as yours, being overlaid week after week with the unseemly discussions of a local clique. Whether one member be not re-elected because his attendance at the meetings of the Photographic Society of London has not been as frequent as expected, or whether another be not elected because he is not popular; or whether the presidency be for life, or for one or more years, may doubtless be of vastly grave import to the Photographic Society, individually and collectively, but is really of no moment whatever to those without the charmed circle.

We provincials look eagerly forward to our weekly News for instruction and amusement, and for the elucidation of the principles and practice of our art; also for reports of the proceedings of home and foreign societies; and these, I imagine, are the chief, if not the only, legitimate objects of such a publication.

I am not aware that the photographic public lies under such a heavy debt of gratitude to the Photographic Society of London, either in theory or practice, as to induce it to submit tamely to such an invasion of your pages; and in looking over several back numbers of the News I deeply regret that so much space has been wasted (I can use no other word) upon a subject entirely foreign, as appears to me, to the normal design of a scientific journal.

In saying this much I am but the faint echo of a sentiment rapidly growing among your numerous country readers.—I am, sir, your obedient servant,  
 R. M. S.

[Our correspondent certainly possesses some grounds for his protest. We can merely plead in extenuation the fact that the Photographic Society has a representative position, and, if in its annual exhibitions only, does much for the advancement of photography. The agitation is doubtless, as our correspondent suggests, due chiefly to the action of a local clique, and it is possible that we have given the matter more space than it deserves. If our readers knew how much we are compelled to reject in such controversies, they would better understand an editor's difficulties. They are not likely to be troubled much further on the subject, as there is little left to squabble for.—ED.]

### PRINTING BY CONTINUATION.

SIR,—I notice, in the last impression of the PHOTOGRAPHIC NEWS, an article on "Printing by Continuation." Now as a printer of some years' experience, I have arrived at the conclusion, that not only does this occur in pigment printing, but also, to a certain extent, in the ordinary silver process. I have frequently put away in a dark room over-night, where no light could possibly get at them, frames containing nearly printed pictures, and found on looking at them next morning that they were sufficiently printed to be taken off without further exposure; this, too, without any discolouration of the paper, as that might be urged as having something to do with a picture appearing to be more heavily printed. Up to the present my investigations have failed to give any satisfactory result, but I think some rather important discovery might be made in this direction, were some more scientific persons to give their attention.—I have the honour to remain, yours respectfully,  
 J. NORTHAM.

*St. Donat's Road, New Cross, February 7th.*

### Proceedings of Societies.

#### PHOTOGRAPHIC SOCIETY OF LONDON.

A SPECIAL meeting of this society was held, in accordance with announcement, on the evening of Tuesday, February 10th, in the Architectural Gallery, Conduit Street, at half-past six o'clock, Mr. J. GLAISHER, F.R.S., president of the society, in the chair.

The CHAIRMAN briefly explained that the council had received two requisitions, the first of which was informal; the second being in accordance with the rules, the council had called the special meeting to consider its propositions. He might add that he had always been conscious that the laws were capable of improvement, but as president it had been his duty simply to carry them out.

Without further prelude he would now call upon Mr. Whiting, as the first signer of the requisition, to bring forward the resolutions.

Mr. HUGHES requested permission to take the place of Mr. Whiting in moving the resolutions. In a long and aggressive speech he proceeded to impeach the council, to explain his view of the reasons for reform, and to show how he thought the new rules proposed by the requisitionists would effect reform. He stated that in the first place, twenty members sent to the council a requisition to call a special meeting to re-consider the laws. They were not bound to state details, but they had attached a memorandum to the requisition, saying the object would be to alter Rules V. and VII. The council were bound by their own rules to call the meeting; but they did not, and to this moment they received no answer to that requisition, and members present in the council had told them how obstructively it was received. A second requisition was sent, giving the details the absence of which they had understood was the ground of objection to the first, and the council had generously accorded them an hour and a-half to discuss the general revision of the laws of the society. It had been suggested to him that the proper course for him was to propose a vote of censure upon the council—

Here faint applause was heard, and the speaker, accepting the demonstration, observed that such a course would be unnecessary, as the voice of the meeting endorsed the suggestion. A general burst of laughter greeted this joke of regarding the stamping of two or three feet and an umbrella as the voice of the meeting. After a protest from the chairman as to this assumption, the speaker resumed, and explained that in the present system it was possible for members to remain indefinitely in office. One had been in the council for sixteen years (hear, hear, and a cry of "Shows that he sticks to his duty"). Another had been in eighteen years, and was now a candidate for election; but they never saw him at the society. It was necessary to alter this, and by public nomination by members, and non-eligibility for re-election for twelve months after retirement, they hoped to secure this. He moved the adoption of the two new laws, V. and VII., of which notice had been given.

Dr. MANN seconded the resolution, and said, personally, he would have been glad to see the amendment of the council take the place of the resolution; but under existing circumstances he feared a different course must be adopted. He had been told that this movement had its origin in two or three persons disappointed at not receiving medals, two or three disappointed at non-election on the council, and a few generally discontented persons; but the meetings he had attended of those organizing this movement led him to a different opinion. He found a general opinion prevailed that the council wanted to keep this matter from general discussion; and as the committee proposed in the amendment must report to a general meeting, and the matter would thus be practically indefinitely postponed, he gave his support to the resolutions. Dr. Mann then proceeded to refer to the council having placed his name as retiring from the office of vice-president, and alleging that it was in the order of seniority. It was true he did stand in the order of seniority, but he did not believe that it was for this reason he was placed on the retiring list. He was not present at the council meeting at which this was done, but he was told by a friend who was present, in whose probity he had the highest confidence, that considerable discussion preceded his being placed on the retiring list, and that it was not on account of seniority that he was placed there.

The CHAIRMAN here rose and said he must at once correct such a mis-statement. He pledged his word that it was for seniority alone that Dr. Mann was placed on the retiring list, no other motive of any kind having been hinted in the council by anyone.

Dr. MANN was bound to accept this explanation, and in such a case to approve of the conduct of the council; but in Mr. Hughes's case, whom it was believed would have been nominated by the council—

The CHAIRMAN again rose and stated that Mr. Hughes's name had been proposed by himself, and, after three ballots in the council, had been rejected by a majority; but not one word of discussion or influence of any kind was used.

Dr. MANN then briefly seconded the resolution.

Mr. HENRY WHITE then moved the amendment of the council, that a committee be appointed, to consist of six persons, nominated by the members generally, and three to be nominated by the council, to revise the laws, and report to a general meeting. He expressed a conviction that the laws would bear revision, but thought it would be generally agreed that piece-meal legislation was dangerous, and proceeded to point out the anomalies which would be introduced into the laws if the two new rules were



carried and the remainder left as they were. The introduction to the laws would be contradicted by the new laws. He further pointed out the difficulties which arise from the necessity, involved in the proposed new laws, of being compelled at the end of every three years to change the treasurer, just as he was perfectly master of all the details necessary to secure his most perfect efficiency for his office. He had himself acted as treasurer for seven years, and knew much better than those who had not undertaken the responsible task, what difficulties could arise. He believed that he was the person referred to as having been fifteen years on the council; seven of these years he had been treasurer, all through the trying times of the society's financial difficulties. To return to the question of the laws. He believed they might be improved. It was an old question, which had been mooted almost from the time of the infancy of the society. Once a new code had been printed, and, after considering them, the late Chief Baron declared his conviction that the old ones were better. And that was the difficulty: all the new rules proposed had been found, on consideration, less perfect than the old ones. This was most undoubtedly the case, in his conviction, with the new rules proposed now. He remembered that in the original laws of the society some of the provisions resembled those in the resolutions now proposed, and it was found desirable to alter them. One especial point which required revision in the laws was found in the fact that country members had no voice in the society. This was an unquestionable grievance, but one which the new rules of the requisitionists did not propose to remedy. In fact, in this respect the old laws were better than the proposed new ones. By the old ones country members could nominate officers by sending names in writing. By the proposed new ones of the requisitionists they could neither vote nor nominate, for nomination was only to be done personally in public meeting. It could not be doubted, he thought, that a general revision would be better than a partial one, and therefore he proposed the amendment appointing a committee with that purpose in view. He would just say one word on the subject of the requisitions, the facts of which had not been stated accurately by Mr. Hughes. By Law VI. twenty members could require a special meeting to be called without stating any purpose. But the requisition did state a purpose—the alteration of laws—and by Law XI. it was enacted that no meeting could be called for alteration of laws without stating the precise alteration to be proposed, that due notice could be given to every member. The requisitionists did state their object to be alteration of laws, but did not state the nature of the alteration proposed. Hence their requisition was not in accordance with either Law VI. or Law XI, and the council had no alternative but to decline acting upon a requisition so framed. It was unanimously agreed, therefore, to invite a deputation from the requisitionists to confer with the council as to the precise object in view, in order that it might be brought before the members without the delay contingent upon framing another requisition. Three of the gentlemen associated with the requisitionists were present at the council, and these gentlemen joined in that unanimous resolution which was now styled treating the requisitionists with contempt. The requisitionists sent no deputation, but sent another requisition, which had been duly acted upon. He concluded by pointing out the evils of personal nomination, and the advantages of written nomination available for every member in the society, all of whom ought to receive voting papers, so that country members as well as town members would be duly represented in the management of the society. These and other advantages might be secured by the committee proposed in the amendment, which he would now propose.

Mr. F. BEDFORD begged to second the amendment.

Mr. WALTER BIRD, as one of the first requisitionists, had not felt that they were treated with sufficient consideration. He added that, much as he esteemed the position of the chairman, and respected the firmness often necessary in his office, he thought that the power of the chair was at times brought to bear too strongly upon individual members.

The CHAIRMAN said he was utterly taken by surprise by the remarks just made. He had been so constantly greeted with expressions of kindness and approval on all hands, that he certainly never anticipated such a charge. In fact, their meetings had hitherto been so pleasant, that he never remembered, until the last meeting, having had occasion to call any one to order. At the last meeting he was compelled to repress an irregularity on the part of Mr. Stillman, who challenged the accuracy of the minutes of a meeting at which he was not present. The question to which he referred as omitted from the minutes was irregular. The secretary had no power to answer the question. He, as

president, might have instructed the secretary to give the desired information, and should have done so; but the question was irregular, and its omission from the minutes was not an inaccuracy. In any case, every gentleman must know that Mr. Stillman's objection was irregular, and his offer of a printed journal was one the chairman could not accept. Regarding the requisition and the complaint about its treatment by the council, he was not less surprised. It was received on the 24th of December, and he at once communicated with the secretary to call a council meeting to give it effect. The secretary was absent from home; and being at that time in the midst of Christmas holidays, it was impossible to secure a council meeting for a few days. When they met, every disposition was felt by every one to meet the wishes of the requisitionists, but their requisition was found to be informal; and, acting under legal advice, they found they could not act upon it. They therefore issued a kindly invitation to the requisitionists to meet them, that all might work in harmony. The requisitionists had taken another course; but he felt bound at this point to interpose an explanation.

Mr. SAMUEL FRY agreed that some revision of the laws was desirable, and hoped the discussion would only lead to renewed vitality in the society. He thought that this end would be best secured by the amendment, which he begged to support.

Mr. J. R. SAWYER opposed the amendment, because it proposed to postpone the consideration of the report of the proposed committee to a general meeting, which would involve waiting twelve months.

The CHAIRMAN explained that this was an error: no necessity for such waiting existed, nor any idea of such a thing.

Mr. GEORGE HOOPER, as an independent member, strongly protested against a body of twenty or thirty members—requisitionists or otherwise—meeting in private to make laws, bringing them to a meeting cut and dried, and urging the meeting, without further time for consideration, to carry them as laws of the society. He objected also to a plan which turned the president from his office at the end of three years, and no matter how perfect or how useful, prohibited the society from electing him again. He objected to a number of men combining to cast slights upon officers who had brought them through troubles into a prosperous condition—gentlemen who had done all the work of the society, and produced the bulk of the papers read. If members felt blame existed anywhere, let it be placed on the right shoulders—their own—for anything of which they had to complain was due to their own supineness. He objected to a scheme which cut out country members from all voice in the society. And whilst he objected to all this, he would ask, who are these twenty or thirty members, and what have they done for the society, that they should meet in secret to frame laws for the society, and urge their acceptance without the consideration to which they would be submitted in a committee such as that proposed in the amendment, which he would support?

Mr. CHERRILL wished to say a few words from a country member's point of view. There were, he believed, upwards of 200 such members in the society, and the gentlemen who were called the requisitionists seemed to have ignored them entirely. They were, in fact, more completely ignored by the new rules of the requisitionists than they were by the old rules of the society. He could not but think that it was a lame and imperfect movement which ignored upwards of two-thirds of the members. He should earnestly support such an effectual revision of the laws as the amendment seemed to contemplate; but he could have no confidence in the promise of a revision by those who opposed that amendment. It was very strange that, as several of those connected with this agitation had been members of the council, not a word, not a suggestion, of the need for reform was heard from them whilst there; as long as they were in power they said nothing of the need of reform. Now the council which dispensed with their services was found to be a self-elected and self-seeking body! If the council really were self-elected, it was the fault of the members, who had the power of nomination. But his opinion was, that the reason the members had not exercised the right of nomination was simply due to the fact that the council list had always consisted of the very best men for the office, and to the fact that the members at large had full confidence in the council. The new rules proposed by the requisitionists appeared to involve three principles, all of them, in his view, open to objection. First, nomination of members of council in open meeting by members. This could be done already, and something more, for written nominations now could be made as well. Second, the three years' system. They had the power now of retaining officers three years; but it appeared to him singularly unwise to render the retention of an unsuitable officer for three years imperative,



whether he was valuable to the society or not. But however valuable an officer might be, according to the requisitionists, at the end of three years go he must. And he must confess that this provision appeared, in his opinion, aimed at their present admirable president. The third provision seemed to have a similar tendency. At the end of three years the best possible officer must go, although they might be keeping on an inefficient one three years. He earnestly supported the amendment, because it gave power to secure a thorough revision of the rules. It appeared most liberally framed, for it gave the requisitionists power to nominate six members, and the council only three, so that the council nominees manifestly had no power of out-voting the committee generally.

Mr. F. HOWARD urged the meeting to adopt the proposed laws of the requisitionists as an instruction to any committee.

CAPTAIN ABNEY said that the amendment proposed by the council, and the committee which the requisitionists proposed to ask for at the general meeting, might practically issue in a similar result, namely, a revision of the rules. But there was a wide difference in what would be implied by the two things. If the amendment were carried, the society and its existing council would be working in harmony to a common end; but if it were rejected, in order to appoint a committee on a different motion, it would imply a slight on the council, and a determination not to accept their co-operation in securing such a revision of the rules as might be beneficial to the whole society.

Mr. STILLMAN opposed the amendment, because it appointed no time to report, and gave no instruction to a committee.

Mr. HART agreed that country members ought to be represented, and said that could be arranged for afterwards if the new rules were carried.

Mr. MAYALL thought really but little difference existed between the professed aims of both sides. The council said the laws wanted revising, and the requisitionists said the same thing. But the subject required careful consideration, as the proposed new laws plainly showed. They were certainly not well digested, although he agreed with them in some points. It was not surprising that after a society had been in existence upwards of twenty years some of its laws should require revision; but he could not understand the objection to an amicable arrangement of the matter. The council made a suggestion that seemed beyond question. They proposed a committee in which they offered the opposition six members as against three to be nominated by themselves. He hoped such a committee would be accepted, and that, as Mr. Cherrill had suggested, a recognition of country members would form one of the provisions.

COL. STUART WORTLEY intended to vote for the amendment. In the Royal Society, in the Royal Academy, in every society with which he was acquainted, it was the custom for the council to furnish a house list of nominations for the new members of council, and he saw no reason why the Photographic Society should give up the benefit of the precedent which was found to work well in other learned societies. It was manifest that a council which had been devoting time to carrying on the business of the society must have a better idea of those who ought to retire, and whom it was desirable to elect, than many who had never thought about the subject. The society had always the privilege of rejecting the house list and proposing others. Further, he felt that it was not wise to compel the society to give up a president, however efficient, at the end of three years. He did not, however, think that it was intended as an attack upon the present president, whom he believed every one regarded with esteem.

Mr. HUGHES, in replying, said he protested against the appointment of a committee without any instruction of any kind.

Mr. SEBASTIAN DAVIS interrupted to point out that the preamble to the amendment distinctly recognized the principle which the requisitionists were contending for, only suggested that a still broader principle should be acted upon.

Mr. HUGHES, in reply, said that the council objected to their first requisition on the ground of vagueness. He objected to the council's preamble to the amendment on the ground of vagueness, and urged upon the meeting to carry the resolutions as a definite instruction to any committee that their revision had to include the primary principles of the resolutions. He objected to the council's amendment because of its constitution, and asked what right the council had to claim the nomination of any of the committee, especially without first submitting their names to the meeting. The council wished to have the nomination of three dark horses—three unknown men.

Mr. BLANCHARD asked if the council consisted of unknown men?

Mr. HUGHES resumed, that he further objected that reporting to a general meeting left the matter over indefinitely, as the only general meeting was the annual meeting. He urged the meeting to vote for the resolutions.

A VOICE.—Every meeting of the society is a general meeting.

The CHAIRMAN explained that in a sense all meetings were general; that it was entirely erroneous that any notion of delay was involved, or could be, as the report of a committee would of course be made to a special general meeting, the present being, in the ordinary course of business, adjourned for receiving such report. After a few further explanations, he put the amendment, and then the motion.

The amendment of the council was lost, and the resolution of the requisitionists carried by a majority of six, twenty-two voting for the amendment, and twenty-eight against it. The chairman said they would now proceed to

#### THE ANNUAL GENERAL MEETING.

The minutes of the last general meeting having been read and confirmed,

The TREASURER read his report, which showed a balance in hand of upwards £170.

The PRESIDENT expressed his pride and satisfaction in such a report, and referred to the difficulties through which the council had, during the last few years, happily conducted the society. From having a deficit of £500, they now had £300 to the good which might now be used for the benefit of the society and the art. He would now call upon the secretary to read the report of the council.

The SECRETARY then read the report, which gave an interesting résumé of the proceedings of the society, and of the progress of photography during the past year. The report having been received and adopted,

The CHAIRMAN said that the duties of the council for the past year now being completed, he should be wanting in self-respect if he remained any longer president of the society. By the vote of that evening, and the terms employed, it was manifest that the council and himself no longer retained their confidence, and in the name of the council, who had asked him to represent them, and himself, he tendered the resignations of its officers into the hands of the society. He thanked them for many expressions of past kindness, and hoped for the society every success in the future, and a better president and better officers. He would now vacate the chair, which, perhaps, Mr. Hughes would come and fill.

The PRESIDENT then left the room, accompanied by members of the council. For a short time bewilderment and confusion ensued.

Mr. STILLMAN moved that the resignations be not accepted.

Mr. MAYALL said: You cannot help accepting them. This is what your success has brought you. You have passed a vote of want of confidence, and then you talk of not accepting the legitimate consequence. Such a position is perfectly ridiculous.

Col. WORTLEY protested against the word ridiculous.

Various voices were heard suggesting various things. Mr. Bedford was nominated to take the chair by one, Mr. Davies by another, and Dr. Mann by a third. Some one then remembered that the president had ironically invited Mr. Hughes to the chair, and that gentleman proceeded to undertake the office. After further uncertainty and confusion,

Mr. HUGHES proposed to proceed with the ballot for officers.

Col. WORTLEY protested against the balloting papers as illegal, as they did not contain all the names proposed. The names of Mr. Hughes and Mr. Dallmeyer had been proposed, and did not appear in the lists.

Mr. HUGHES said that he had written to the secretary to decline; as he thought, under existing circumstances, it would be unbecoming of him to accept office.

After further conversation,

Mr. WALTER BIRD moved that the resignations be accepted.

Mr. STILLMAN seconded the motion.

A general conversation followed, condemning the council for want of respect and consideration to the requisitionists in having resigned. One gentleman affirmed that when a Ministry resigned, it always held office until another was formed.

Col. STUART WORTLEY emphatically affirmed the contrary, saying that when the Cabinet resigned, it did so completely and at once. The comments on the council now that they had retired were very unfair. They had the perfect right to resign, and had acted as men of any feeling of self-respect must have done. The most that now could be done was to pass an amend-



ment to the last motion, asking the council to reconsider their decision, and retain office for the present.

Mr. HOOPER seconded this amendment. The original motion was carried by 16 against 13.

The CHAIRMAN again proposed to go on with the ballot.

Col. WORTLEY again protested against the balloting as illegal.

Mr. STILLMAN proposed getting a legal opinion.

After some further confused conversation it was proposed to elect officers at once without nominations.

Mr. W. BIRD proposed Dr. Maun as president, and Mr. Goslett seconded him.

Dr. MANN declined, under the circumstances, to stand.

Mr. HUGHES again proposed to proceed to the ballot, saying that if they elected the five duly nominated at the last meeting, these being appointed could fill up the vacancies caused by all the resignations, as an addendum to Rule VII., passed in 1856, gave them power to do. Whilst the ballot went on they would proceed with the appointment of a committee.

Mr. STILLMAN moved that a committee be appointed to revise the laws, and that Mr. Hughes be empowered to nominate the members.

Mr. HUGHES said that as they had themselves objected to the council proposing to nominate three out of nine, it would not be wise to give him the power of nominating the whole committee.

Dr. MANN seconded the resolution, and suggested that the number be nine. To this Mr. Stillman agreed, and the motion was carried.

The following gentlemen were then proposed and elected:—Dr. Mann, Mr. Hughes, Mr. Stillman, Mr. Sawyer, Mr. Bird, Mr. Hart, Mr. Werge, Col. Wortley, and Mr. Thomas. Mr. Sebastian Davis, Mr. Wharton Simpson, and Mr. Pritchard were nominated, but declined to act. Mr. Englaud, Mr. Bedford, and Captain Abney were elected in their absence.

Mr. STILLMAN proposed that the committee report on March 10th.

Mr. HUGHES asked if it would not be better to avoid naming any specific time for reporting?

It was agreed that the meeting be adjourned to March 10th, when the committee would report progress.

The returns from the scrutineers gave the following as the present officers of the society:—*Vice-President*—Mr. J. R. Johnson. *Council*—Dr. Mann, Mr. J. A. Spencer, Mr. W. Woodbury, Mr. F. Howard, and Mr. Goslett.

Mr. HOOPER wished to say, before the meeting separated, that if, as had been declared, the vote of the requisitionists was not intended as a vote of want of confidence, the only way to prove it would be to take some steps for the re-election of Mr. Glaisher and the council. He was satisfied that only by some such step would Mr. Glaisher be induced to return, and he did not know where they would replace him.

After some further conversation the meeting was adjourned.

#### EDINBURGH PHOTOGRAPHIC SOCIETY.

An ordinary meeting of this society was held in 5, St. Andrew Square, on Wednesday evening, the 4th inst., the president, Mr. R. G. MUIR, in the chair.

The minutes of previous meeting were read and approved, and the following gentlemen admitted ordinary members:—Messrs. John Legget, William Anderson, John Stenhouse, D. Finlaysou, W. B. Wise, and D. C. Simpson.

Mr. J. M. TURNBULL read a paper "On the Keeping of Sensitized Paper" (in our next), and showed a number of specimens, both of paper and prints, in various stages of manipulation.

Mr. PANTON had used Durand's paper for a considerable time, and found it perfectly white, and remain good for several months, if kept under pressure.


Dr. THOMSON had frequently used preserved sensitized paper, and found it answered his purpose admirably; he had some now in his possession that was sensitized in July last, and was still as white as ever, and printed well. In its preparation two baths had been used: the first, a 60-grain solution of silver, which thoroughly coagulated the albumen, and converted the chlorides of the alkaline metals into chloride of silver; and the second, a 20-grain solution of silver, containing 25 grains of citric acid. The citric acid, he said, prevented discolouration of the paper, and gave it its keeping properties. Before printing, however, he considered that it was absolutely necessary to fume with ammonia, to get rid of the citric acid; and he had no doubt that

if Mr. Turnbull had tried the fuming, he would have found his paper answer better. The fuming generally discoloured the paper a little, but the darkening entirely disappeared in toning.

Mr. BASFORD had used the collodio-chloride paper a good deal, but it discoloured rapidly, and had to be given up.

Mr. PRINGLE said that it was no doubt desirable to get a paper that would keep good for some time, but he thought it more important to know how to use it properly. Some people seemed to think that printing was merely a mechanical process that could be done by anybody, and that all that was necessary was good paper and a fair negative. He believed that there was more art required for really high-class printing than was generally conceded, and thought that photographers generally did not give it the attention it required.

The PRESIDENT said the subject was one of such interest that it could not be fairly discussed off-hand, and suggested that the discussion be adjourned, to enable members to experiment, and bring up results at a future meeting. (Agreed.)

Mr. TURNBULL then introduced a lamp which he had constructed as an improvement on that used in the sciopticon. The improvement consisted in the introduction of a third wick standing thus  between the two angular ones. His object was, first, to increase the light; and secondly, to get rid of the dark shadow which the sciopticon, as at present arranged, casts on the upper part of the screen. The increase of light was very marked, but, unfortunately for the success of the lamp, the shadow on the screen was rather intensified.

Several modifications were suggested with a view to get rid of the shadow, and it was understood that the subject would be again introduced.

After the usual votes of thanks, the meeting adjourned.

### Talk in the Studio.

**FIRE IN A STUDIO.**—On Saturday evening week, a fire occurred in one of the studios of Messrs. A. and J. Boal, through the servant cleaning the room by candle-light. It is supposed that a spark must have caught some of the canvas scenery, or carpet, for about an hour afterwards the neighbours gave an alarm, and the scenery and blinds of the roof were found in a blaze. Having, fortunately, some water at hand, the fire was soon put out, without damage to cameras, lenses, &c., which were in the studio. The damage (about £30) is fortunately covered by insurance.

**PREPARATION OF BROMIDE OF AMMONIUM.**—In a recent communication to the *Pharmaceutical Journal* Mr. Price gives the following as a convenient mode of preparing the bromide of ammonium required by photographers:—Take four ounces (troy) of good bromide of potassium and dissolve it in six fluid ounces of boiling water; next dissolve three ounces (troy) of sulphate of ammonia in four and a-half fluid ounces of boiling water, and then mix the two solutions. Double decomposition now takes place, the result being the production of bromide of ammonium and sulphate of potassium. The latter salt is sparingly soluble in water, and still less so in weak alcohol; hence Mr. Price recommends that one and a-half fluid ounce of alcohol should be added to the cold liquid, and the whole then allowed to stand for twenty-four hours. The greater part (nearly all) of the sulphate of potassium will then be found to have crystallized out. The whole is filtered, washed with a small quantity of a mixture of one part of alcohol and four of water, and the filtered liquid then evaporated to dryness. The bromide of ammonium so produced keeps well, and is free from sulphur—a not uncommon constituent of a bromide made from hydrobromic acid prepared by the action of sulphuretted hydrogen on bromine in presence of water. We need scarcely say that the presence of a trace of sulphur would produce spots and stains in the sensitive photographic film prepared from a collodion in which the impure bromide had been used; and we have little doubt that some apparently unaccountable stains traceable to the collodion are often really due to the impurity of the salts used in bromizing the liquid.

**NEW METHOD OF MOUNTING STEREOSCOPIC VIEWS.**—By *Professor Himes*.—Instead of affixing the photographic prints to the usual stiff cards, they are mounted in a book about  $3\frac{1}{2}$  by  $2\frac{1}{4}$  inches, on leaves of heavy paper of double that size,



fastened by their centres on short guards, like maps in an atlas: each book containing about a dozen such double leaves. A piece of smooth paper is placed between the halves of each stereograph after mounting, and the book subjected to pressure, as of a copying press, for an hour or more. By opening such a book at any of these double leaves, and sliding it between the wire guards of a Holmes stereoscope, like an ordinary stereograph, an effect equal in all respects to that of the card stereograph is produced. Since the pictures can be readily examined by simply turning the leaves, and may be compactly stowed away, it is claimed that there is comparative freedom of the photographs from injury by mechanical, chemical, or atmospheric influences, whilst the facility of reference to any particular picture is greatly increased, especially when collections are properly arranged and classified, for which purpose each book is supplied with blank index and title pages. It is suggested that collections of stereographs on this plan, illustrative of different subjects, scientific and otherwise, or supplementary to books upon such subjects, might be placed in libraries, accessible to the public, with almost as little risk of injury as the books; a few simple instruments hung near such cases being the only addition necessary. The range of purely scientific subjects susceptible of stereoscopic illustration might increase under such encouragement.—*Journal of Franklin Institute.*

**TO SAVE OVERPRINTED PHOTOGRAPHS.**—Tone and fix in the usual way. Having taken out all sufficiently light, turn off the hypo fixing solution, and wash in one or two waters; then turn on to the prints a very strong, fresh solution of hyposulphite of soda in water quite warm; watch closely, and remove as soon as light enough. If very dark prints are to be bleached, don't overtone, as they will look more toned after bleaching. Prints bleached in this way will come out as brilliant as when printed right, and fixed in the usual way. I have tried several formulæ, such as cyanide, ammonia, &c., but the prints were spoiled in tone and brilliancy, also the paper turned yellow.—*J. SAUNDERS, in Philadelphia Photographer.*

**TO DUPLICATE NEGATIVES BY THE WET PROCESS.**—Place upon each corner of the negative to be duplicated a piece of cardboard sufficient to keep the coated and sensitized plate from touching against it. Place this in the plate-holder, and upon it an ordinary wet collodion plate, and close as usual. Place the camera in good light, with two thicknesses of tissue-paper over front of lens; slide the bellows as close to lens as possible, and be able to cover the plate; expose about the ordinary time for a negative in the usual way; develop; and you get a nice sharp transparency, and from this you can make as many negatives as wished in the same manner, or enlargements can be made as with other transparencies.—*Ibid.*

**REMOVING IODIDE FROM BATHS.**—Mr. S. M. Miller, writing to our Philadelphia contemporary, says:—"I have made a little discovery (new to myself at least) in regard to clearing old baths of iodide. Let the bath get almost cold enough to freeze, and the iodide will form in the shape of very fine crystals, which are easily filtered out. I find the method very simple and effectual, especially in winter. When summer comes, I shall adopt the plan of packing my bath in ice, to produce the necessary degree of cold. This may be old to you, but I find it a decided saving of time and labour over the old method of diluting, filtering, and evaporating."

## To Correspondents.

*J. M.*—The best mode of removing stains or dirt from the surface of a lens consists in the application of dilute sulphuric acid, one part of acid to two parts of water. Rub gently with a piece of woollen cloth, and then rinse.

*J. FRANKS.*—We have no knowledge from experience, but believe the exposure is very much longer. The maker will doubtless give you a satisfactory comparative statement of the difference in exposure.

*BACUP.*—Without knowing the nature of the impurity it is difficult to give a suggestion as to its removal. Are you sure that the yellowness is the result of the washing water? If the impurity of the water be due to organic matter, which is most probable if the water has a yellowish brown discolouration, Condry's fluid (permanganate of potash) will purify it. Try that. Boiling will aid in removing many impurities. Try it. 2. You may obtain carbon enlargements of Messrs. Spencer, Sawyer, and Bird, at their printing works at Ealing.

**NORTHUMBERLAND.**—You can scarcely have read all that has recently appeared in our pages on the subject of enlarged negatives. There are two plans strongly advocated by successful enlargers. One plan consists in producing a transparency the same size as the negative by superposition, either on carbon transparency tissue or on an albumen plate. From a good transparency so obtained from a good negative you may secure a good enlarged negative. The other plan consists in taking an enlarged transparency, and carefully working upon this to remove defects and soften coarseness. From this transparency you can also secure a good enlarged negative. But you employ neither plan. You produce a small transparency in the camera on wet collodion, and from that an enlarged negative in a similar manner, and you obtain a coarse result. This is the usual result under such circumstances. Every defect in the original negative and the transparency is magnified, and the coarse texture and the coarse deposit of an iron developed image on wet collodion are magnified. With a very fine negative of a very refined face you may, by your plan, obtain something pretty good. Read carefully the recent papers and discussions, and follow out the hints given. The portrait you enclose is wanting in sharpness, and is too abruptly lighted. The shadowed side sadly wants reflected light.

*R. W.*—A good landscape lens or a triple will answer well for all the purposes you mention.

*T. T.*—Unless you have some knowledge of German pronunciation, you will scarcely speak the name with absolute precision; but it is pronounced very nearly as it would be in English, giving, however, the sound of *oo* to the *u* in the first syllable of the surname. *JOHN BULBECK.*—There is no work on lighting except that of Bigelow, which is, however, a very good work. Robinson's "Pictorial Effect" also contains much information on the subject. Perhaps, on the whole, you will find it more generally useful.

*J. W.*—The general lighting of your pictures is not bad, but the negatives are over-intensified, and the prints not quite deep enough. The reflections from the white paint on the south side seem in some somewhat too strong. We should in such a room have blinds fixed at the ridge for the skylight, and curtains sliding on rods for the side lights. The lens you mention would answer well for such work. You may at times find the lenses of the maker in the hands of second-hand dealers, and you may safely purchase there. We highly approve of Weston's Burnisher.

*A. H.*—A pencil drawing may be copied by the wet process with perfect success. Do not over-expose the plate, and develop with a weak iron developer, say five grains of the iron salt and fifteen minims of acetic acid in an ounce of water. If the solution is somewhat old, so much the better.

**DEAF AND DUMB ARTIST.**—Thanks. In our next.

*W. R. F.*—Thanks. The paragraph is amusing enough, as illustrating the want of familiarity with the art in many journalists. The Vander Weyde process is referred to in the first part, and the lens of extraordinary power is the very large condenser of Monckhoven's enlarging apparatus.

*H. W. D.*—You do not seem to realize the distinction between the amount of a salt contained in a measured ounce of a saturated solution, and the amount which must be added to an ounce of water to saturate it. When you have added six drachms of protosulphate of iron to an ounce of water, you will have saturated that water; but you will have considerably more than an ounce of saturated solution, although by measure you will not have an ounce and six drachms. If you wish to enter fully into the details of this question of saturated solutions of iron salts, we must refer you to Storer's Dictionary of Solubilities, where you will find it treated at much greater length than we can treat it here.

Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED.

*MR. P. A. F. VILLIERS,* Newport,  
Photograph of Mayor and Corporation of Newport.

*MR. A. J. COOKE,* Thurles, Ireland,  
Photograph entitled "When will he come?"

*MR. J. C. STEPHENS,* Falmouth,  
Photograph of R. N. Fowler, Esq., M.P.

*MR. C. W. SMART,* Leamington,  
Photograph of Joseph Arch.

*MR. H. K. SNAW,* Clifton,  
Photograph of Rev. R. W. Randall.

*MR. C. SANDERSON,* Preston,  
Two Photographs of Rev. Father Cobb.

*MR. H. GREGSON,* Luton,  
Four Photographs of Rev. J. J. Twells.

*MR. A. RAYNER,* Leek,  
Two Photographs of A. J. Worthington, Esq.

*MR. F. C. EARL,* Worcester,  
Photograph of a Dog "Peasant Boy."

*MESSRS. BEAUFORT and BRUCE,* Galway,  
Photograph of Interior of St. Nicholas Church, Galway.

*MR. A. KNIGHTON,* Kettering,  
Photograph of Interior of Industrial Exhibition, Kettering.



## The Photographic News, February 20, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

SPECIAL CORRESPONDENTS.—DUMMIES IN THE STUDIO.—THE WAR ON THE GOLD COAST.—THE TRANSIT OF VENUS OBSERVATIONS.

*Special Correspondents.*—"I certainly must get a pocket camera!" a well-known artist exclaimed in our hearing the other day. He had been to St. Petersburg on behalf of the principal illustrated London paper, sketching at times with might and main to secure a pictorial record of the interesting scenes going on around him. The subject points of a group, or the central portion of a ceremony, his rapid pencil could cunningly sketch all in good time; but then the general aspect and surroundings were not done justice to, and it was in this respect that he sorely needed assistance to give a proper reflex of the same. Thus in the ceremony of "Blessing the Neva," or "The Royal Marriage," if, as he explained, he had had an assistant to expose for him a dry plate, and thus secure an outline (no matter how rough or indistinct) of the whole display, he would have been able to have furnished a much more truthful representation, because the surrounding details would have been correctly put in. Had he been thoroughly accustomed to Russian scenes and Russian costumes, background and accessories might, it is true, have been imagined when finishing off the sketch; but in any case a rough photographic cliché would have been of the greatest aid in producing the block. The time may not be very distant, therefore, when we shall see special correspondents not only provided with a trusty field glass, but carrying a *reconnoisseur* camera, with instantaneous dry plates, which will furnish at home as much matter for descriptive articles as the whole mass of manuscript notes or pencil sketches they have taken.

*Dummies in the Studio.*—Dummies come out so very truthful in photography that their aid is seldom invoked by the professional photographer. Dress a doll up any way you like, it will never be mistaken for a baby; and if you really want to prove that a stuffed animal is really what it appears to be, you have only to photograph it and show the result. Therefore we think that few answers will be received by a Coblenz photographer who advertizes in the *Archie* that he has for disposal "a wooden horse, life-size, accurately modelled from nature, provided with saddle and bridle complete. The horse is well suited for a garrison town where cavalry are stationed."

*The War on the Gold Coast.*—Although statements have appeared in our contemporaries to the effect that photographic apparatus in some quantity has been shipped to the West Coast of Africa, we fear that no official steps have been taken to secure photographic records by Government. Mr. Pritchard, of the Woolwich Photographic Establishment, as also Captain Abney, R.E., who conducts the Photographic School at Chatham, are both unable to give us any information on the subject, and the inference is that if any apparatus has been despatched, it is private property. That several of the officers engaged at the scene of war have provided themselves with cameras and the necessary requisites, there is little doubt, for photography is a favourite pursuit with many in the army, and this would be too good an occasion to pass over; therefore we may at any rate rely upon some photographic records being secured. It is, however, very much to be regretted that the Government, in restricting the non-combatant element to the narrowest limits, did not spare a couple of men to act as photographers. Pictures of well chosen subjects would have been invaluable hereafter as records, and would form the most important portion of any history that may be written on the subject, for the natural difficulties and peculiar features of the country would thus be most graphically portrayed.

*The Transit of Venus Observations.*—As we stated a little while ago, Dr. Krone, the President of the Photographic Society of Dresden, has been instructed by the German Government to make the photographic observations of the transit of Venus at a station on the Falkland Islands, and the distance of the station will naturally necessitate his departure in early summer. The photographers to represent this country are not yet told off, but it is settled that Captain Abney, R.E., goes to Alexandria in charge of the station there. Dr. Vogel, of Berlin, who has had more to do, perhaps, with photo-astronomical observations than any man in Europe, is to take charge of a station somewhere in China or Japan, the locality not being yet fixed. It is to be hoped that the name of Captain Waterhouse, the Assistant Surveyor-General of India, may not be forgotten when choosing photographers to undertake the observations, for that officer, besides being a most accomplished operator, has already acquired special experience in this particular branch of camera work.

### THE RIGHT TO ONE'S FACE.

A RECENT extract from an American paper, given in the *Times*, has again revived a curious phase of the copyright question, and raised the question, has a man a copyright in his own face? It is certain that the statutes relating to copyright make no provision for protecting such a right, and it is somewhat puzzling to decide in what legal form the question could be raised. The case in point has reference to the publication of an engraved portrait; but the practice of photographers of exhibiting specimen portraits is referred to in connection with the subject as open to serious objection. The extract to which we refer is as follows:—

*THE RIGHT TO ONE'S FACE.*—The right of a man to control the publication of his own features is a rather delicate point of personal law which has never been sufficiently elucidated. The well-known practice of photographers in exhibiting copies of the portraits which they have taken is one which, on some grounds, may be deemed open to grave exceptions. The position of the illustrated papers in the matter might also repay inspection. A contemporary, having prepared for publication a portrait of a lady whose husband is in high official position under the present administration, the picture was reluctantly suppressed at the request of the latter on the assurance that it was the lady's wish. At the same time, the journal announced that this was the last time such a concession would be made to private prejudices. It proclaimed the doctrine that neither man nor woman had any property in the reflection of their features, and that hereafter in a similar case it should not "feel compelled to regard the wishes or request of the party concerned." The same journal announced in one of its early impressions that it would give representations of private wedding parties whenever it felt inclined, and that it "should not feel compelled to regard the objections of the parties concerned." In cases like these it is difficult to draw the precise line where liberty ends and license begins; but men of right feeling and true delicacy know by instinct what is correct, and what is a violation of personal rights and domestic privacy. If the portraits thus published in disregard of wishes and requests were uniformly artistic or approximately like, one part of the objection, though not the essential part, would vanish; but they are often such hideous caricatures as to amount to positive pictorial libels. The paper we speak of published, a day or two after his death, what it called a portrait of Charles Astor Bristed. The face depicted might have belonged to a butcher or a drover, but had not a trace of the intellect and high breeding marked in every feature of its pretended subject. It may be said that very few people really object to have their portraits published. That is probably true, yet it is not exactly the point. The question is not whether it is generally right and proper for an illustrated paper to publish such portraits as it may deem of interest to its readers, but whether such portraits may be rightfully and properly published in defiance of the expressed will of their prototypes. It would certainly be a most interesting case for a court of law. —*New York Times*.

Mr. John Leighton, the errors in whose letters we pointed out a few months ago, when the question of portrait

copyright was discussed in the public press, in referring to this question again, takes occasion to repeat the same erroneous statements. He says, in a letter to the *Times* :—

SIR,—It is a lamentable fact that no one in England has a copyright in his own face, the same being at the mercy of any photographer who may seize it. The copyright in negatives, as we know by a late discussion in *The Times*, is vested in the photographer, unless formal stipulations are entered into prior to the sitting.

At the time of the formation of the Art Copyright Act I strongly opposed the immolation of the sitter's rights, and since then the processes and methods of reproduction have multiplied indefinitely, the objections becoming greater—the illustrated papers often taking any print they please, instead of asking the person to sit to their nominee, that they may produce an original and satisfactory picture.

At the period of the death of Madame Rachel, the eminent French *tragedienne*, a Paris photographer managed to obtain access to the mortuary chamber, where he posed the body conveniently, and took several negatives. After this he employed an artist to touch her up, opening the eyes—in fact, to animate the corpse. That, I need hardly say, resulted in a ghastly libel, which stared out horribly in all the print shops, causing the family to proceed against the perpetrator, who was fined and punished, though not until after many had been sold. We should have wanted precedent, but the French laws being codified render justice more facile.—Yours ever truly, JOHN LEIGHTON.

Royal Institution, Albemarle Street, Feb. 14.

It is probable that the English law would have found ready means to punish the perpetrator of an outrage like that described, but, as it scarcely bears on the question of copyright, it is not necessary to discuss it. It is in the notion that the photographer, in the ordinary practice of portraiture, acquires a copyright in the photographs he produces, without the consent of the sitter, that Mr. Leighton's error consists. The Copyright Law distinctly enacts that where the portrait is a commission, produced for "a good and valuable consideration," the copyright does not vest in the artist without a written agreement with his customer. That point relating to the sitter's rights is tolerably clear in the Act; whether the copyright accrues to the sitter without an agreement is not quite so clear, as the Act is very clumsily worded. Some have held that the copyright does, according to the Act, so accrue to the sitter. But whilst this point does not appear certain, it is practically of little importance: for whether, as we are inclined to think, no copyright arises in such case; or, arising, it belong to the sitter, the issue would be much the same, except in exceptional circumstances not often likely to arise.

A further letter has been sent to the same journal by Mr. A. Beau, who proposes to make the custom, now universally recognized, of printing from a portrait negative solely to the sitter's order, more imperative and certain, by registering the copyright, in the sitter's name, at Stationers' Hall, a written agreement being, of course, previously necessary. He says:—

SIR,—May I be allowed a few words on the controverted question of negatives, as it is now transferred to a ground upon which I am particularly concerned?

I am sure no respectable photographer will contradict me when I assert that the rule has always been to keep all private negatives for the sole use of the persons whose likeness they represent, and, moreover, that this rule may be said to have been strictly adhered to.

I would propose a very simple plan of solving the difficulty. It would consist in entering the negative at Stationers' Hall, in the name of the sitter, who would pay the charge of such entry—viz., 1s.—and thus secure the copyright of the image.

For my own part, I am quite ready to offer this satisfaction to any of my clients who may wish it.—I am, sir, your obedient servant,

ADOLPHE BEAU.

283, Regent Street, Feb. 16.

## MY TROUBLES IN TAKING LARGE DIRECT HEADS.

BY R. W. ALDRIDGE.\*

MR. CHAIRMAN and GENTLEMEN,—It is not often that a discussion introduced at these meetings is allowed to extend to a third night. The subject of "Enlargements *versus* Direct Pictures," opportunely introduced by our friend Mr. Croughton, has excited so much interest, as witnessed by the articles and letters in the journals, that I think it would be a pity to let it drop while anything remains to be said upon the subject. Much of this interest is doubtless owing to the recent competition for the Crawshaw prizes. The principal speakers upon the two last occasions are both well known as being professionally engaged in enlarging. It is, therefore, not very surprising that they should, even in spite of an old proverb, have treated the matter as if there were only one side to the story. They have certainly enlarged upon the advantages of enlarging. It is to be regretted that none of those gentlemen who have carried off the prizes have been induced to take up the glove on behalf of the direct heads. I feel that I am but half a champion at the most, as I believe that after a certain point the enlarging process has the best of it. This point I am inclined to place at about half the size of life. It is for this reason that I have preferred to entitle this paper on "My Troubles in Taking Large Direct Heads," rather than damage the cause I espouse by my inefficient handling. I have also another motive: I believe that in the last competition the size of the face—or, as it is wrongly called in Mr. Crawshaw's announcement, "the head"—namely, from seven and a-half to eight inches, considerably exceeds the average length of the "human face divine," even in male heads. Of course, in the case of the fair sex—always the most attractive part of a photographic display—the difficulty is much greater; so much so as practically to be prohibitive to those who object to the distortion inevitably resulting from making objects larger than the model. By the enlarging process it makes but little difference whether the face is increased to eight or eighteen inches—disproportionate distortion will not be the result; but in the direct heads it is far otherwise. In the discussion that followed the reading of Mr. Edwards's paper, I stated my objections to any comparison between the direct and enlarged heads of the larger than life size. Practically they were both enlargements, and under such circumstances I prefer those that were correctly labelled. I am a believer in large lenses up to a certain point, and it is to prevent their being overweighted in the coming race, as well as the hope that a record of my mistakes may be useful to those who travel the same road, that I have put together these few notes. Much has been said both for and against the proportions I stated as the standard on the last occasion; resulting, however, in an unanimity, on the part of those who took the trouble to submit them to the test of actual measurement, for which I had scarcely hoped. As the subject seems to possess an interest, I will give at somewhat greater length the usually recognized proportions, and the way in which they are applied by artists.

According to the standard proportion, the face is allowed to contain one-tenth of the length of the whole figure, measured from the sole of the foot to the crown of the head. The face itself is divided into three equal parts—or, as we say, into three noses—namely, from the bottom of the chin to the bottom of the nose; the nose itself; and, lastly, from the top of the nose to the parting of the hair. This is always called a *face*. Another measurement of the same length, from the parting of the hair to the crown of the head, completes the head, which is computed to be one-eighth of the figure measured as before. In practice the last measurement is generally found to be a little smaller than the rest. From this it will be seen that even

\* Read before the South London Photographic Society.



in the case of a bald person, or where the head is covered, there need be no difficulty in finding the top of the face; it is only necessary to take a point the length of the nose above the nose itself. As Mr. Hubbard has correctly stated, the measurement by faces, which is held to be the more correct, is generally adopted by sculptors, who, as they more frequently represent the nude figure, are obliged to be very particular in their proportions. The other, although less exact, is found more handy by painters, and sufficiently true for their purposes. Thus the shoulders are said to be two heads across. The body, including the head and the legs, are each four heads in length. The head and chest to a level with the nipple are equal in length to the remainder of the body—that is, two heads. The legs, again, are divided into two equal parts at the patella, or knee-pan. It will be seen from this that the eight-inch face will give a head about ten inches. Now, whether we multiply the first by ten or the latter by eight, the result is the same, namely, six feet eight inches as the height of the figure. It strikes me the recruiting sergeant would pronounce this rather above the average of humanity. I will not weary you with any more of these details. Should any of you wish to pursue the subject further, I cannot do better than refer you to Flaxman's Lectures on Sculpture, to Bonomi's work on the proportions of the human figure, or to the numerous observations on the subject to be found in Leonardo da Vinci's Treatise on Painting.

The enlarging processes have certainly made much progress within the last year or two. No doubt something of this is due to the improved quality of the negatives themselves, especially where they are prepared on purpose for enlarging. Still more, however, I believe, is owing to the superior beauty and fitness of the transparencies; for the old process of producing the enlarged prints from the negative direct may now be considered as obsolete.

Mr. Croughton has given us much valuable information on the treatment both of the transparency and the enlarged negative. As this information was of a practical character, and has since been supplemented by more useful details, I think we are much indebted to him; as, indeed, we must be to all who freely impart the knowledge they have gained at the price of much toil or experiment. Much of this information was not new to me, as I have for some time been working one of the so-called secret processes very closely corresponding to it. Mr. Edwards reserves his information on this subject until we have gone through the process of hauding him five guineas each. I am afraid this little preliminary will prove an obstacle to most of us, notwithstanding the recommendation of our enterprising friend Mr. Tully, who has himself gone through the ordeal. It is, I believe, no secret that Mr. Edwards's plan depends for its success principally upon the transparency being made upon a structureless film of albumen. A similar film, I am happy to state, is about to be placed within the reach of every photographer by my friend Mr. Kennett, whose sensitized gelatine pellicle appears to me to fulfil all the conditions required. I have seen plates both coated and developed by the new plan, and can truly say that I have never seen anything more simple, or producing more pleasing results—at any rate, in the hands of the inventor. The pellicle, as it is called, will be supplied at such a rate that two dozen half-plates may be prepared by the photographer at a cost of one shilling. Surely this is a step in the right direction.

As most people do, I have put off the consideration of my troubles as long as possible; but the story must be told. It was about the commencement of September last, on my return from a trip in the country, that the idea first occurred to me that I would compete with the rest in the smaller series of the Crawshay prizes—the 4½ inch faces upon 15 by 12 plates. Having a 5 D Dallmeyer lens, and a camera 15 inches square, opening to about 3 feet 9 inches, I thought myself fully equipped for the purpose. I was soon undeceived, how-

ever, for the lens proved too small, and the camera just a thought too short. I had, however, imbibed the idea, and was not easily daunted. I made up my mind to go in for the smaller set; perhaps even for the larger. "Ce n'est que le premier pas qui coûte," said Napoleon, who is generally allowed to have shown great skill in taking off life-sized heads by a process very direct indeed. I soon borrowed a 7 D from a friend, and my assistant knocked up a box about 18 inches deep, which we fixed to the front of the camera, thus making the latter more than 5 feet long. The next thing wanted was a bath. I consulted the catalogues of the dealers, but it was evident that nothing suitable was to be had under a bank note. I had not yet entered into the spirit of the thing, so I hesitated. I remembered, however, to have read in the journals a description of a wooden bath coated with pitch. Just the thing! I got a carpenter to make me a large bath of ash, with a hinged lid, and a bar fixed horizontally near the top. Having cut a suitable hole in the top of the table made with a stand, this bar not only prevented the bath slipping through, but enabled me to rock it very easily. The bath was made up according to the formula of Elbert Anderson. The next thing wanted was a dipper. I have a decided objection to ebonite in any shape. I was told glass dippers were not made of sufficient length; still I bought the longest I could get. It proved too short by several inches, so we made up the difference with string, and pulled it up by a loop. The dipper, being slight and brittle, soon broke at the bottom. Here was a fix. "Who loves a garden loves a greenhouse too," said Darwin. Happy thought!—a wooden bath should have a wooden dipper. Looking about, I spied an old rose-wood T-square that had been knocking about for many years. Just the thing: with a little cutting it held the plate capitally. The weight of the plate carried this new-fashioned dipper to the bottom of the bath, but, being very buoyant, we had to lift it carefully, as it had a tendency to jump out. Only one thing now remained—the camera-stand. All our efforts to use or improve those I had were unavailing; they proved too short and too unsteady. A deal table with a wooden bar to raise the back of the camera answered the purpose very well.

(To be continued.)

## MY EXPERIENCE IN TAKING DIRECT LARGE HEADS.

BY H. GARRETT COCKING.\*

HAVING heard from my father (the secretary of this society) that Mr. Aldridge was going to read a paper with the title of "My Troubles in Taking Direct Large Heads," I thought I would give a few remarks on the way I got my large heads for the recent Crawshay competition.

The idea did not occur to me till a few days before the date on which all pictures had to be sent in; therefore you will see that my time was very short—the more so as I was the only part of the apparatus that I had. But through the kindness of one of the members of this society that difficulty was soon overcome. Not having a dipping-bath for so large a plate, I was forced to use a flat dish; therefore now, having got apparatus and bath ready, I set to work—with what success you can judge from the two specimens I have brought down with me.

In my first trial, I placed my sitter in the centre of the glass house (which is about twelve feet wide), and found that the exposure was very long—in fact, about three minutes. I saw at once that that was too long; so, trying another, I placed the sitter this time close to the glass (side light), and then the exposure was shorter a great deal—in fact, less than one minute, and that I call very short considering the time of year these negatives were taken, and the very foggy weather we had at the time for ending pictures to the exhibition.

\* Read before the South London Photographic Society

The large head of a gentleman was only taken the day before the time for sending them in, at a little after nine in the morning. The exposure for that was about forty-five seconds, which, in the summer, on a fine day, would be less than thirty seconds. That exposure cannot certainly be called long, especially with a lens (Ross's  $4\frac{1}{2}$  diameter) that was not made for that sized head; and if you are going to say, as I read in one of the journals the other day, that "we must have enlargements because of the expense of the lens for the direct heads," I think the question of expense has nothing to do with the question which are the best—enlargements or direct heads.

I also find in these large heads that if the blinds for shading are kept a long way off the sitter, the shading is very easy indeed, for the face, to a certain extent, will give shading, and more violent shadows can be thrown on these heads than on the smaller size, and, therefore, more powerful effects can be obtained.

I think that enlargements for children are useful, as they cannot possibly sit the time required for the direct large head; but for adults direct pictures are far the best. Take, for instance, the large pictures at the recent exhibition on twenty by sixteen plates, full length: what enlargements can come up to them for tone or natural expression?—for I contend that in enlargements there is a want of life-like expression. Or, again, take the half-figures on same sized plates: who would wish for better? And if the public want larger than those, I say that photography ought to go out of the field, and leave the artist on canvas with his brush to paint the large heads.

Enlargements are all very well for landscapes, where there is no expression wanted, but merely light and shade; then they are very useful indeed, as the time of exposure is a great point.

I think the slight want of sharpness that now occurs in the large direct heads (through the want of a large lens) is not so much an objection, as the intense sharpness all over enlargements, which is what the enlargers are now striving for. There are a good many parts of the face that are better for being slightly out of focus. Photographers must, sooner or later, come to prefer large direct heads to enlargements; and for my part, when the apparatus and chemicals for taking them have been improved, I can see no difficulty in doing them; and even now, in my opinion, there is something about a direct large head—perhaps the expression "life-like" best expresses it—that is far preferable to an enlargement, and I hope that in this year's competition a good many more photographers will think so too; therefore, more competitors, and, I hope, greater improvements.

#### AMERICAN CORRESPONDENCE.\*

**Ventilation.**—My experience with English dark closets is, that they are even more poorly ventilated than ours, so I trust a few thoughts, as follows, from Mr. R. J. Chute, one of our most practical men, may serve your readers:—

"As we all know, the vapour from ether is heavier than the atmosphere, and is therefore not so easily carried off by the ordinary means of ventilation. It falls and combines with the atmosphere in the lower part of the room, so that the operator is continually moving in and breathing a combination of elements not very well calculated to promote a healthy condition in an organism so delicate as the human lungs.

"Now, the important consideration in reference to this matter is to devise some means of ventilation that shall carry off the fumes that fall as well as those that rise. I have long had in mind a plan which I intended to try whenever I should have occasion to fit up a dark room, but as there seems no immediate prospect of my putting it into operation, I will make the suggestions in hopes they may prove of benefit to somebody else.

"I should construct a ventilator, if convenient, on the side of the room and near the place where the plates are to be coated with collodion, but I would make this a secondary consideration if I could run it up against a chimney flue or stove funnel, as the

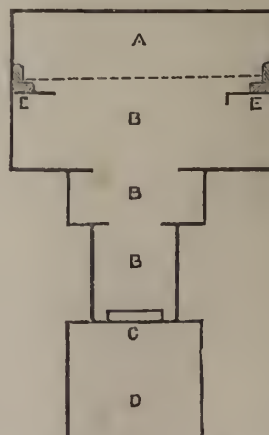
important point would be to warm the ventilator, and thus secure an upward current; or else let the outside arrangement be such as to secure the desired upward movement. If not put in when the room is built, let it be put up against the wall. It need not project more than two and a-half or three inches from the wall, but let it be eighteen inches or two feet wide, making an opening something the shape of the inside of a large bath-holder, running up the wall. It should come down to within about three feet of the floor, and be open at the bottom. With a current of air drawing into this the collodion vapour, as it falls from the plate, would be immediately carried away. In order to supply the room with fresh air, I should have a perforated wooden or tin pipe run around near the top of the room, and connect either with another room where it would get a good supply, or else run it outside. This could be regulated by a damper, so as to admit as much or as little fresh air as desirable. A small ventilator, in or near the top of the room, to carry off the hot air in summer, would complete the arrangement, and, I believe, would give a well ventilated, healthy dark-room.

"The principle of the arrangement is to ventilate from the bottom of the room, and, while carrying off the chemical vapours that accumulate, avoid dust that might be carried up where the ventilator is exclusively at the top. If it be not practicable to carry the ventilator up near a chimney or funnel—and this would only be of advantage in cold weather—I would suggest that it be carried out of the highest part of the room, so that it might be warmed as much as possible by the heat that rises in the apartment. In order to secure an upward current of air, or prevent it from blowing down, as it will do sometimes, a damper or valve, something on the principle of a valve in a pump, might be placed in the upper part of the ventilator, which should be either square or round, so hung that the slightest current upward would open it, while a downward movement would close it."

#### A SIMPLE METHOD FOR PHOTOGRAPHING MICROSCOPIC OBJECTS.

MR. THOMAS H. PINELL gives the following method in our excellent contemporary, the *English Mechanic*:—

"If a piece of ground glass be held several inches above an upright microscope, the object beneath will be seen upon the glass; the size being dependent on the distance that the glass is held above the eye-piece. It is clear, then, that if a sensitised plate be substituted for the ground glass, and protected from all light except that coming up the tube of the microscope, a negative can easily be taken, if the light be sufficiently powerful to affect the silver film. The following method of so taking a negative is very simple and inexpensive, requires little apparatus, and the use of but one room.



A, the camera; B, the camera support; C, eyepiece of microscope; D, body of microscope; E, slide rests; dotted line shows the slide in position.

"For a camera, a cardboard box should be used (e.g., a strong 'seidlitz powder' box), a circular hole being cut in its bottom  $2\frac{1}{2}$  inches in diameter; and two slips of card pasted along both ends to prevent the slide from being rubbed, and to hold it firmly in its place. To support the camera, two or three cardboard boxes should be fastened



together, and holes punched through them to admit the passage of light; the topmost corresponding in size to the camera, beneath a smaller one, and under this a yet smaller, which is best circular in shape; the three, when fastened together, being of such a height that the slide is supported from six to eight inches above the eyepiece. (The camera can, of course, be supported in any other way, but this way is preferable, as lightness of construction is needful.) Lastly, cut a hole in the bottom of the lowest box, so that the eyepiece, when the cap is removed, may fit tightly within it. The negative should be taken at night, or in a dark room; the *modus operandi* is shortly as follows.

"Place the microscope upright, insert and focus your object, using a candle as an illuminating agent, and to obtain a powerful light, place a condenser between the microscope and candle, so that the light may be condensed upon the concave mirror. Next adjust the camera-support and camera, placing a piece of ground glass in the rest intended for the sensitised plate; upon this the object is seen, and must be carefully focussed. Take off the camera, remove the ground glass, and substitute a sensitised plate; replace the camera, then burn in the candle about an inch of magnesium wire. Remove the camera, take out the plate, develop, and sensitise in the usual way. The light from the candle should be rendered mono-chromatic by sprinkling on the wick a few grains of salt."

### ON DURABLE SENSITIVE PAPER.

BY J. M. TURNBULL.\*

IN saying a few words in opening the discussion on this subject, it will not be out of place to begin by stating the importance of having a prepared sensitive paper which will keep for some time. There are a great number of photographers to whom such a paper will be useful. To photographers who print in large quantities, and whose prints are toned regularly every night, such a paper may not be of much use; but to parties who have only a few prints, and who only print at times, a paper that will keep for some time is a great advantage. When such a person has a few negatives ready for printing, or when a good day for printing comes, it puts off a good deal of time to prepare paper, and sometimes in the winter the best part of the light is gone before that can be done. It is also very useful, when the prints are not done enough at night, to lay them aside till the next day, or till some other time when it may be convenient to print them.

About the beginning of 1872, I devoted a good deal of time and trouble in preparing paper that would keep sensitive for a time, and on the 3rd of May in that year I published in the PHOTOGRAPHIC NEWS a formula for preparing paper to keep. The paper which I prepared at that time I was hardly satisfied with, as it scarcely gave prints equal to that by freshly-prepared paper, though it possessed excellent keeping qualities. Some that I kept for more than twelve months was still white enough to give good results.

You will here allow me to say that I should not be satisfied with any paper, however prepared, which did not give prints equal to those on the best freshly-prepared paper.

There are three qualities which a perfect keeping paper should possess. In the first place it should keep well for some time (say from four to six months); secondly, it should tone easily, and give a good tone; thirdly (though it should come in the first place), it should give results equal to what I may call a standard—that of freshly prepared paper. I am afraid, however, that these three qualities are not so easily combined, and that the paper which will possess them all, is still a thing to be found. It is perfectly easy to prepare a paper that will have the first-mentioned quality—that of keeping. I here show you a couple of prints on paper prepared twenty-two months ago in which the white part is scarcely at all yellow;

but you may see at once that it does not give a good vigorous print—in short, though it has the first, it lacks the other qualities.

I may lay it down as the result of my experience, that the longer the time albumenized paper is prepared to keep, the less satisfactory will be the results. I have also proved this from samples I have tried of papers prepared commercially, but whose method of preparation is still a secret. One sample of paper which I procured kept very well for upwards of three months, but, after printing and putting in water before toning, turned (evidently from something in its preparation) very disagreeably transparent, as if saturated with something of a waxy or oily nature, which it never entirely lost, even when dry and mounted; it also toned very slowly. The difference was most apparent when toned beside other prints or freshly-prepared paper. It also had, as I have already said, when mounted, a sort of transparent look, and a sort of woolly appearance; in short, it was not up to what I have called my standard, and therefore did not please me.

I had also another sample of paper, prepared commercially. It gave very good prints, of which you have a sample; it also toned easily along with prints on fresh paper, but is somewhat deficient in keeping qualities. I have here a piece of the paper, about seven weeks from the maker, which, although it has been carefully kept in a tin case, is quite discoloured—too much so to give good prints.

Here is a print by a paper with which I am greatly in love—I mean the collodio-chloride. Prints by this paper have a singular beauty, and a rendering of all the finer half-tints and delicate details in a negative—a sharpness and a softness combined, if I might so speak—which it is improbable can be given by an albumenized paper. But though I thus praise the paper, it has thus its defect: whenever it touches the water to wash or tone it, it has an inherent tendency to roll or curl up, which does not leave it till finally on the mounting-board. There is also a difficulty with the toning: if toned to anything like the colour that an albumenized print should have, it gives a poor, bleached, blue-looking tint, nothing like what it was when it left the frame. The toning can be got over by under-toning the print to the look, as when fixed the print comes a great deal in the tone. Could a paper of this kind be perfected, to give as little trouble as albumenized paper, I have no doubt that it would be the printing process of the future for small work, such as cards. The paper has the merit of keeping good for years. The samples which I now show are between two and three years prepared, and are very slightly coloured. Prints on this paper have also a permanent character, and have also, as I have already said, a beauty which we can never hope for in prints on albumenized paper, or, in fact, by any paper or process.

I will now give, in a few words, the method by which I prepare albumenized paper to keep for a few weeks. Paper so prepared can also be made to keep for twelve months, but I do not recommend that, as it is at the expense of the toning and finished result.

I do not think paper by this method should be prepared to keep more than two to three months. The paper is first floated on the usual silver bath of from forty to sixty grains, and hung up to dry; when nearly dry, but not dry enough to curl up, it is floated on a bath of citric acid five grains, water one ounce. It must not lie any time on this bath—just so long, and no longer, than that the paper may lie flat, when it is again hung up to dry. Such paper will keep white for some weeks. Should the paper be wanted to keep longer, it may be left a little longer on the bath, or the citric acid may be increased to ten or fifteen grains, when the paper will keep longer, but not give such good results. Paper floated on the five-grain solution tones as readily as, and gives as good finished prints, as the ordinary paper. Here are prints by it, both toned and untuned, from which the members can form their own opinions.

\* Read before the Edinburgh Photographic Society.

# The Photographic News.

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## THE PHOTOGRAPHIC SOCIETY OF LONDON.

WE have been inundated with letters during the past week relating to the crisis in the affairs of the Photographic Society of London. Some of these letters consist of angry comments on, and protests against, the proceedings at the meeting of Tuesday week. Little purpose could be served by the publication of such letters now, and we merely give insertion to two or three in which moderate counsels prevail. Other correspondents ask for advice and information as to action in an emergency for which few precedents exist. At present we can simply reiterate the advice given in our last, and urge our readers to do nothing rashly. For the moment little more can be done than to wait and watch the issue of events. How far the legality of the proceedings at the two meetings can be successfully questioned we are unable with certainty to state. A correspondent writes to state that all the proceedings were illegal. The rules are silent as to the mode of voting in the case of a motion like that brought before the special meeting; but as the ballot is prescribed in other cases, it would not be unnatural to suppose it applicable in such a case. Had the ballot been employed in taking the votes, possibly—or, indeed, probably—some of those acting under the instructions of the requisitionists, who hesitated to secede from their leaders openly, would have voted with the council. One gentleman who, not being a member, signed the requisition, is also said to have voted; but whether these things invalidate the vote we are unable at present to say. The vote for the council was unquestionably illegal in spirit; but whether it will be construed so in the letter, is more doubtful. The mode of election is distinctly prescribed as by ballot, the very essence of which is secret voting. Here a large number of persons met together and were pledged to vote for certain names indicated to them; and as very few but those persons were left in the meeting when the voting took place, the ballot, as the ballot, was practically a farce.

Amongst the letters we have received, are some earnestly urging us to use any influence we can to secure the restoration, at least for the present, of the council and officers who have resigned. That is a question upon which we can say very little. Whether these officers could be induced under any solicitation to again accept office we cannot tell. So far as the good of the society is concerned, the advice of "An Independent Member" appears to be prudent. He is desirous of seeing the late officers under-

take office until the rules are revised, and a new council and officers can be elected under the revised provisions which shall be made. He appears to hold the view once enounced by President Lincoln, under somewhat analogous circumstances, to the effect that it "was not wise to swap horses whilst crossing a stream." If the late officers could be induced to resume duty until new rules were framed, accepted, and confirmed, and then, resigning in a body, such of them as felt disposed presenting themselves for re-election under the new regime, it would doubtless be for the benefit of the society. But as such a result could only be obtained by unanimity in a meeting asking them, and unanimity amongst themselves in accepting such an invitation, the issue is scarcely likely to be secured.

Col. Wortley proposes a bold project, and one well deserving of serious consideration. Failing the rehabilitation of the Photographic Society of London, which many seem to think must dwindle into a purely local society, he suggests that a Photographic Society of Great Britain shall be at once established. A large number of distinguished photographers have been by the recent proceedings severed from the old society, many more residing in all parts of the country have no sympathy with the agents in this agitation, and if the project were well headed, a large following might be secured without difficulty, and the result might be a National Society, with wider aims than that which has just been so rudely shaken. With the older and more distinguished members of the society, much of its prestige would be transferred to the new society to which they would give adhesion. The project has much that is attractive; but we must confess, that until we see a restoration of the honoured position of the old society placed beyond hope, we should be sorry to see any steps taken which would precipitate its declension into the merely local position prophesied for it by some. We can therefore at present only reiterate our advice, "watch and wait."

## PHOTOGRAPHIC BAS-RELIEF.

WE have recently had our attention called to a pretty novelty in portraiture, which, like many ingenious novelties, owes its origin to France. The new portrait is a bas-relief on a photographic basis, or rather a photograph on a basis modelled in low relief. The examples we have seen are all of cabinet size, and consist of large bust portraits, both in profile, three-quarter, and full face, the first-named being, we think, most suitable and most effective. How the bas-relief is produced, whether dependant upon some ingenious process, or upon the personal skill of a modeller, we are unable to state. All that is necessary to the result is, we understand, that a plain paper print shall be forwarded to the artist, and this plain paper print is modelled into the due relief, the back being filled up with some plastic material. Some of our readers may be familiar with a similar kind of portrait in relief modelled in wax, and tinted in the colours of life. These photo-bas-reliefs are similar, but, instead of being coloured, they are in the simple black and white of the photograph, which is, in our estimation, much more severely artistic and satisfactory than the tinted wax. A good photograph, perfectly indicating the modelling in the original, must, it is manifest, be a necessary aid in the production of these plastic portraits. In the examples we have seen, every undulation in the contour of features, bosom, hair, and drapery is admirably rendered, and the result is singularly pleasing. The project for an English agency is scarcely complete at the time we write; but we hope shortly to be able to announce conditions which will enable English photographers to secure such portraits for their sitters on satisfactory terms, and without further trouble than is involved in sending a plain paper print—we should recommend a carbon print—to the artist's agent, from whom, in a few days, it may be again received, a charming portrait in bas-relief.



### PHOTOGRAPHS AT THE INTERNATIONAL EXHIBITION.

WE have pleasure in announcing that the Photographic Department at the forthcoming International Exhibition of this year has promise of greater success than has distinguished the exhibitions of the last two or three years. The gallery set aside for photographs is in a better position than at preceding exhibitions, a room in the Albert Hall, on the level of the Conservatory, and forming a direct thoroughfare in the Exhibition, having been devoted to the reception and display of the photographic contributions of the year. The committee having charge of this department have resolved to invite the contribution of examples of the life-size and other large portraits produced for the Crawshay competition, and we hope to see not only some of the specimens exhibited in that competition, but also some of those which, from various causes, did not find their way into the Gallery in Pall Mall. To afford facilities for dealing with these additional contributions, her Majesty's Commissioners have resolved to extend the time for the reception of photographs to the 15th of March, and we hope that these extended facilities will afford opportunity, for those of our readers who have not already made arrangements, to send in some of their best pictures. The committee in whose charge the photographic department has been placed by her Majesty's Commissioners are Dr. Diamond, Mr. R. Thompson, Captain Abney, and Mr. Wharton Simpson.

### FRENCH CORRESPONDENCE.

AS I have already stated in my last letter, the *tour de main* proposed by M. Melchion has received, after trial, a most enthusiastic reception. Following the example of M. Franck de Villecholle and M. Liebert, many photographers have exclusively adopted this system of operating, which consists in allowing the light to penetrate into the camera for an instant, and act upon the sensitive plate, before the actual exposure takes place. This plan of manipulating secures a reduction in the period of exposure by at least one-third. M. Franck de Villecholle has essayed whether a similar plan could not be adopted for producing prints upon paper, and this is the method he pursues:—Before placing in the printing frame the sensitive sheet of albumenized paper, he exposes it to the action of daylight for a few moments, just time enough to give it a faint and scarcely perceptible tint, and immediately afterwards he proceeds to print. His first essay was with a very bad negative, which had never given good half-tones, and to his great astonishment he obtained, in a much briefer period than was usual, an excellent picture, with every gradation of tint, such as only a good cliché would yield under the most favourable circumstances. In rendering an account of these experiments, M. Franck stated that every day he made use of this modified printing method, whether for the purpose of accelerating the printing off of copies, or for producing better pictures from hard negatives.

The occurrence of spots upon positive prints, and especially upon albumenized pictures, formed the subject of discussion at the last meeting of the French Photographic Society, held on the 6th inst. From what was said on that occasion, the unanimous conclusion arrived at was that it is absolutely necessary to prevent the piling of prints one upon the other before they are perfectly dry, and to take precautions against the action of damp. M. Franck narrated a circumstance regarding one of his friends who could never obtain his prints free from these distressing defects. M. Franck sent for some of his pictures and cardboards, and mounted the prints on his own premises, when it was found that there was then nothing to complain of in the finished picture. The cause of the defects was, therefore, shown to be on the premises of the photographer himself, and on enquiry it was discovered that his studio

was paved with tiles, which, in a fervour for cleanliness, were washed very often. On the advice of M. Franck the frequent scrubbing with water was discontinued, and then no more spots upon the albumenized paper were observable. It was therefore to dampness that might be attributed these blemishes, which were probably nothing more than fungi, always liable to be produced in a moist atmosphere.

At the same meeting M. Derogy exhibited to the members of the society a new applanatic lens, which he has just constructed, and which is a rectilinear instrument with much depth of focus and width of angle. It also gives very uniform illumination, so M. Derogy assured the members, together with a high degree of rapidity. Several pictures were shown which had been obtained by the aid of this novel instrument, and which were of a most remarkable character. I allude, among others, to a group of one hundred figures, all of which are well rendered, notwithstanding the different planes and the wide angle embraced in the picture.

A Marseilles photographer, M. Jonbert, has sought to remedy the lack of sharpness which is often observed in clichés, despite the amount of care taken in focussing. He attributes the defect to the difference in thickness which exists between the sensitive plate and the ground glass plate upon which the picture has been focussed, and he obviates the inconvenience by employing a moveable frame, disposed in the following manner:—The focussing screen is removed from its frame, as likewise the beading which keeps it in its place, and into the dark slide is put a frame one centimetre in thickness, capable of being easily moved. Above and below, outside the frame, traverse pieces are applied, also one centimetre in thickness, against which are pressed two strong springs. Upon these springs is placed the moveable frame above mentioned, in which is fixed the ground glass. Finally, at the four corners of the frame are fixed four moveable screws, in such a way that the ground glass may be pressed backwards and forwards at will. Every day before commencing work the plates destined to be employed are examined to see if they take the place exactly of the ground glass, and according to the greater or less difference there is between the two, so the moveable screws are turned one way or the other. This very simple verification may be made by means of a rule, or scale, having the millimetres marked upon it.

If I am not wrong, there has existed in England for some time a Photographers' Benevolent Society. A similar institution has just been established in Paris among photographic employés. It is with us a very useful organization, and one which merits every encouragement. Founded in July, 1872, this society has passed through a precarious existence before it has taken a definite standing; at the present moment, however, its establishment is assured, for it already numbers 150 members, and possesses a social fund more than ample to supply its wants. In exchange for a subscription of two francs a month, every one of the members has the right, when he is ill, to a daily allowance of one franc and a-half during the first thirty days of his illness, and two francs for the sixty days following. Besides this he receives medical attendance gratuitously, as likewise medical comforts. When he dies, the society discharges the funeral expenses, and gives a donation of one hundred francs either to the widow, or to the children if not of age. The society, moreover, takes under its wings the business prospects of the members, obtaining them situations, and so forth; and, to facilitate matters, has a register of vacancies, and assistants out of work, that may be readily referred to. This constitutes an assurance to the assistants of regular work, and a guarantee to employers; for connection with the society is naturally regarded a certificate of honour. The body of photographers generally cannot but gain by this new association, which, in Paris, may be

placed beside the Photographic Society and the Syndic Chamber of Photography.

*A propos* of useful applications of photography, there is a banking house in Paris which exacts from every one of its employés a photographic portrait. These pictures are all kept together, not to form an art collection so much as to provide against unforeseen occurrences which from time to time take place, unfortunately—such as the disappearance of one of the gentlemen from the office after effecting a temporary loan or securing a stray pocket-book containing a few notes of value. By this precaution the police could at once be provided with an authentic representation of the guilty one, thus rendering pursuit and capture a comparatively easy matter. The idea is not a new one, for it was sought to do the same in Government offices of all kinds some time ago; but the functionaries of every grade then objected to such a measure as undignified and injurious, and would have nothing of it. Perhaps the question will now be revived.

ERNEST LACAN.

## Correspondence.

### THE CRISIS IN THE PHOTOGRAPHIC SOCIETY.

SIR,—May I call the attention of the members of the Photographic Society to the fact that all the voting at the special meeting and at the annual meeting of Tuesday week was illegal, and possesses no force whatever. According to the rules, the voting must be by ballot. The new rules were carried and the amendment lost by show of hands only, one person to my knowledge—how many more I know not—voting who was not a member of the society. Had the voting been by ballot, I am persuaded the issue would have been different.

The six officers subsequently elected at the annual meeting in guise of ballot were those to whom the requisitionists were openly pledged in their programme. This open pledge, I submit, not only neutralizes, but subverts and destroys, the ballot, and their election is illegal.—Very truly yours,

LEX.

SIR,—In your article on the recent *coup d'état* in the Photographic Society of London, you urge the members who may feel tempted to retire in disgust, to do nothing rashly, as the resolutions passed at the last meeting were not yet law, and possibly might never be; but you do not explain what remedies are available, or what steps can be taken, in the present state of disorganization.

I can quite see, sir, that the complaint in your last of too much of your valuable space being occupied by the squabbles of a local clique was not without reason, and if you will give me space for one or two suggestions I will be very brief. The Photographic Society, which has had a national character, is threatened, if not with dissolution, with becoming a purely local society, and I think it is worth an effort from the three hundred members, or nearly, who have not taken part in the conspiracy, which consists of an insignificant proportion of the members, to avert the catastrophe.

At present there are only the six officers elected on Tuesday evening, and the election of these is so doubtfully legal that Col. Stuart Wortley, I understand, threatened them with a mandamus if they spent one penny of the funds of the society. The resolutions passed at the special meeting do not, I understand, become law until confirmed at a future meeting. If the independent members of the society are sufficiently interested in the matter it would not be difficult at the next meeting to refuse confirmation of these resolutions.

I believe that a great many of the requisitionists are not well pleased at the issue as it stands. Would it not be possible for the moderate men of all views to join in a request that the president and council would resume duty for the present year, during which a committee less one-sided in its composition than that already appointed might revise the laws and bring them before a special meeting for approval, care being taken to give the country members a voice. Then, with new rules and more complete representation of the whole society, all officers might resign at the end of the year, and a complete new election under the new rules take place. The council could then retire with as much honour as they can now, but with less injury to the society.—I am, sir, very respectfully yours,

AN INDEPENDENT MEMBER.

DEAR SIR,—There are cases where defeat is more honourable than temporary victory, and I feel sure that many of the members who voted against the president and council at the special meeting would not have done so had they not been caught by guile, and foolishly pledged their word how they would act before any meeting of the members had taken place, or explanation on the other side made. By their united and ill-advised action they caused a serious and lamentable disruption, and yet style themselves reformers. They also got their leader (Mr. Jabez Hughes) to speak in favour of open and free voting, and then at once proceeded to a ballot, which was a complete farce, as some thirty members had arranged whom to vote for, and the six elected were (with, perhaps, one exception) all from amongst themselves,\* clearly proving that all was pre-arranged, and there was nothing free about it. Now, sir, I believe it is the unanimous desire of the members that everything should be above-board, and as we have had enough of secret combinations trying to undermine a useful and successful society, I trust all this will at once be put an end to; and let the members at the next meeting form themselves into committee to revise the laws, inviting country members to send up suggestions which shall be read from the chair and duly considered. It is to be hoped that all parties and cliques will at once cease to exist, and all amicably combine for the good of the society and the advancement of the art. Let us try our best to reconcile all, make a good code of laws, and then go to work in earnest.—Yours truly,

GEO. HOOPER.

63, Canonbury Park, South, N.

DEAR SIR,—Whatever may be the result of the present movement for reform in our Parent Society, I trust that the new council will set an example by putting themselves, at all exhibitions where awards are made, as the French do—*hors concours*. This would at once put an end to the suggestions that have been made of members of council having, through jurors composed of a portion of their body, awarded each other medals. I feel sure that no recipient of such awards could, under the circumstances, feel that any *real honour* had been conferred on him. Let it never again be said that out of ten medals, agreed to be awarded at one of our annual exhibitions, six of these were awarded to members of council, one not competed for, and the remaining three bestowed on outsiders.

I would also suggest another point; that is, that the Journal of the society should become something more than a mere record of the society's proceedings, and that the council and members should unite, and, by occasional contributions, make it something more than what it has been.

WALTER WOODBURY.

Greenhithe, Feb. 16th.

[It is, perhaps, a little premature to discuss arrangements for the distribution of medals which may never be offered, and, at any rate, could not come under consideration for many months. But there are some slight inaccuracies in our correspondent's letter. The council of a society do not in France, or anywhere else, that we ever heard of, place themselves *hors concours* in exhibitions. The jurors generally do so place themselves in this country, but in France even jurors are not always placed *hors concours*, although it is clear that they ought to be. Whatever council may be in office, it would be an absurd anomaly and great injustice to prohibit their competition for medals. The council of a society should consist of its most distinguished members, and its most distinguished members are those who most naturally win, and most justly receive, medals. Our correspondent is also inaccurate in one or two other points. There were thirteen, not ten, medals placed at the disposal of the jury; and five of them, not six, were given to the productions of members of council. The Journal question is scarcely one for discussion here; but we may remark that its reduction to its present proportions was due solely to the action of some of the gentlemen with whom Mr. Woodbury is associated—their sole aim being an honest desire for economy. The question of its wisdom they will doubtless be able to explain to a new council, when it is formed.—ED.]

### A PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

SIR,—I find myself unable to accept the nomination to serve on the committee for altering the laws of the Photographic Society, and have written to Mr. Jabez Hughes to that effect. I should like, as an independent member of the London Photographic Society, to be allowed to make a few remarks in your columns on the somewhat unfortunate state of affairs in which the society now is.

\*And three of these belong to the same commercial firm.



I much regret (and I think that regret is shared by some of the requisitionists themselves) that some attempt was not made to induce the president and council to withdraw their resignations. I did my best at the meeting to favour such a course, but, unfortunately, without effect, and I fear that the future of the society will suffer from the present state of affairs. By the resignation of the president and council the society loses the services of those men who are acknowledged to occupy the foremost positions in photography; and I do not see how the places of such men as Mr. Glaisher, Sir C. Wheatstone, Lord Lindsay, Professor Stokes, and Mr. Spiller, among scientific men; and of Mr. Francis Bedford, Mr. V. Blanchard, Mr. W. England, Mr. H. P. Robinson, Captain Abney, and Mr. Sebastian Davis among practical photographers, are to be filled by men of the same calibre from the remaining members of the society. We also lose the services of Mr. Biden Pritchard, the excellent secretary to the Society, and of Mr. G. Wharton Simpson, and of Dr. Diamond, who has been connected with the society from its commencement. Under these circumstances I would venture to suggest that if the services of these gentlemen are withdrawn from the Photographic Society of London, the society will lose much in prestige, and will not in future occupy the same position in the eyes of the photographic world as it has hitherto held.

I fear that under the circumstances none of these members will be induced to return to the council, which I think many of us would feel to be a misfortune, because there are men among them whose absence from the society's council will be a serious loss to it; and I therefore suggest a medium course by which photography may yet have the benefit of their services—a society established on a firmer and yet wider basis than is the case with the present Photographic Society of London.

I believe this to be an excellent time to establish a society which shall be called the "Photographic Society of Great Britain," and I believe that such a society would meet with very general support from the great body of photographers. If it were to hold a biennial meeting in one of the large towns of the country, in the same manner as is done by the British Association, great interest would be lent to its work, and the fact of such being a part of its programme would, I think, obtain for it large numbers of subscribers among country photographers. I should hope, and indeed believe, that were such a society now organized, a majority of the gentlemen who have resigned their seats on the council of the London Photographic Society might be induced to give their support to the new one, and we might further hope to have the names of Professor Piazzi Smyth, of Edinburgh; Professor Emerson Reynolds, of Dublin; R. M. Gordon, J. W. Swan, and other eminent men not resident in London, on its council; and Mr. Stillman and Mr. Jabez Hughes, both valuable members of the council of any society, might also be willing to join, the more so as they are pledged not to join the council of the London Society. I venture to hope, too, that our valued friends Dr. Mann, and Mr. P. Le Neve Foster would also give their co-operation, and the elements for the formation of a society of great weight and influence are thus under our hands.

I may also point out that so strong a society could undertake investigations in the various branches of photographic science, could award medals for progress in photography, and could, I believe, be of very great use to the general body of photographers.

Further, I believe that the establishment of such a society would greatly improve the position of photography in general; such a society could watch over its interests with advantage, and it might eventually—and that, possibly, before very long—obtain a charter, and the right to elect fellows, and to have other privileges such as those held by societies of other denominations.

I throw out these suggestions to the public through your columns in the hope that they may be worked into some definite shape. I feel sure, from conversations I have had with many personal friends, that the establishment of such a society would be looked on with great favour, and I think everyone will agree with me that if such a society is to be established, now is the time, and this the opportunity, for it to be done.—I am, sir, yours, &c.,  
H. STUART WORTLEY.

#### PHOTOGRAPHIC BENEVOLENT ASSOCIATION.

DEAR SIR,—In order to bring the existence and claims of the Photographers' Benevolent Association under the notice of all photographers in the country, and to guard the funds against fraud, the rules provide for the appointment of local secretaries in provincial towns.

I shall be pleased to communicate as to terms, duties, &c., with

any gentlemen who will notify their willingness to undertake the office.

All appointments made will be advertised in the NEWS.—I remain,  
W. T. WILKINSON, Secretary.

14, South Street, Bromley, Kent.

#### SHEET GELATINE.

DEAR SIR,—You will remember that in your YEAR-BOOK for 1873 I wrote a short article on the above subject, and some time after (in consequence of the difficulty experienced by some photographers in getting sheet gelatine) I offered to send a few sheets as a sample to any one who would apply to me.

For several weeks I was inundated with applications, and it really took up a considerable portion of my time to attend to them; then came a lull, and I thought the thing had died out. Within the last few days, however, I have had another rush. So, having very little spare time at my disposal, I shall feel obliged if you will kindly insert this letter in the NEWS, in order that those of your readers who think of applying to me may oblige me by favouring one of the manufacturers instead, whose addresses you gave in your last volume.—Yours truly,  
F. A. BRIDGE.

30, Dalston Terrace, Dalston Lane, London, E.

### Proceedings of Societies.

#### PHOTOGRAPHIC SOCIETY OF LONDON.

##### Report of the Council.

"THE society is again to be congratulated on the continued financial improvement in its affairs inaugurated some years back. The outlay has been carefully watched with an economical spirit, so that no undue expenditure of the funds should take place; and the consequence is that there is again an increase in the assets of the society to be reported. This is a point the importance of which cannot be too highly rated; for, as experience very clearly shows, the financial condition of the society influences in a marked degree the services it renders towards the progress of the art, and the interest which its proceedings awaken among the members; for it cannot be denied that the communications and discussions at the meetings of late years have been more frequent and more fruitful than was the case during the period when the society was oppressed (as some thought, hopelessly) with debt. The annual presentation to members of a picture which worthily represents contemporary photographic art has now been regularly established, thanks to the surplus funds in hand; and Mr. William Bedford's 'Old Devonshire Cottage,' which was the print selected last year for distribution, seems to have met the general approbation of members.

"As regards the proceedings of the society, the papers read during the past session include several of considerable importance. At the last anniversary meeting, twelve months ago, it will be remembered that the Secretary of the Royal Society, Professor G. G. Stokes, M.A., D.C.L., gave a discourse 'On the Principles of the Chemical Correction of Object-Glasses,' thus inaugurating the year with a most valuable contribution to photographic optics. He pointed out the discoveries since the days of Newton which had contributed to make lenses of all kinds what they are at the present day, and then proceeded to explain the laws which govern opticians in putting together their lenses, and the reasons of the particular combinations adopted; and he especially referred to the difficulties experienced in securing an object-glass with the most efficient chemical rays, as compared to one in which the visual rays is the main point to be considered.

"At the March meeting the secretary called the attention of the society to a work by M. Victor Fouqué in a paper entitled 'A Contribution to the Early History of Photography.' He supported his remarks by extracts from the book, which, while it placed beyond a doubt the fact that Nicéphore Niepce had been the first to produce permanent pictures from nature in the camera by means of bitumen of Judea, in 1823, also claimed for him the production of camera pictures upon nitrate of silver paper as far back as 1816. From the published letters of Niepce to his brother, there would seem no reason for doubting his claim thus to be considered the first photographer. It was further pointed out in the communication that the assistance and information which Niepce gave to Daguerre upon the establishment of a partnership between those early investigators were of a very complete nature, and seemed to point most unmistakably to the fact that some of the main ideas



elaborated in the process of Daguerreotype emanated from the earliest of photographers, Nicéphore Niepce.

"A paper 'On the History of some Early Photographs, Uranium Prints, &c.' was read by Mr. John Spiller at the April meeting. The author called to mind that uranium had from time to time been frequently resorted to by photographers in their work; and the production of ferrocyanide of uranium prints, as practised some time ago by Mr. Robert Hunt and M. Niepce de St. Victor, ought not to be lost sight of. The peculiar and pleasant tone of the three pictures was such as to recommend them under certain circumstances; and Mr. Spiller not only explained, but demonstrated the working of the process before the society. On the same occasion, Captain Abney, R.E., criticised, at some length, the chemical theory of the latent image as propounded by Dr. Reynolds. He believed that gentleman to be perfectly correct in his assumption regarding the action of light upon iodide of silver, as to two bonds of iodine being liberated by the same, and being thus free to enter into other combinations, but deemed it a moot question whether the image was formed of sub-iodide of silver by the addition of silver or by the abstraction of iodine. The author rather inclined to the opinion that the sub-iodide was formed in the latter manner, no image being capable of development on iodide of silver without the presence of an iodine absorbent.

"In May a communication relative to two novel methods of carbon printing by M. A. Marion was read. The two processes were termed 'Mariotype by Pressure,' and 'Mariotype by Contact.' The author supported his statements by some excellent illustrations of pigment printing, produced by the methods he described. 'Mariotype by Pressure' consisted in exposing a sheet of bichromated gelatine to the action of light under a cliché, and then transferring it to a bath of weak bichromate solution, and afterwards employing it in a press as a printing block. Instead of being inked, a solution of bichromate of potash and chrome-alum was applied to the surface with a sponge, and then a sheet of carbon tissue pressed down upon its surface. This latter in part absorbed the chrome-alum, where this liquid had permeated the printing-block—viz., in those parts unaltered by light—and after the two surfaces had been in contact for a brief period the tissue was withdrawn, the block again moistened, and the operation repeated. The tissue was then developed, and an image formed by such portions which had been fixed by the chrome-alum refusing to wash away. 'Mariotype by contact' consisted in sensitizing a sheet of gelatinized or transfer paper, printing upon the same with a negative, and then pressing a piece of tissue moistened in bichromate solution upon the gelatine image. The development took place some hours afterwards, when the black pigment was found to adhere to the gelatine image. It is much to be regretted that M. Marion, who was a member of this society, did not live to work out more fully these promising processes, which only represent a small section of the good work he did in aiding the progress of photography. He fell ill within a few weeks of their being made public, and died in the course of the summer. Mr. F. R. Elwell, at the same meeting, contributed some valuable notes on instantaneous photography, for which he has acquired considerable reputation. He detailed his plan of working, and gave the formula of the developer he employed.

"In June Mr. Jabez Hughes read a paper 'On Improvements Needed in Photography, and Remarks on Three Wet Processes.' The author pointed out how very little progress had of late years been made with the wet collodion process; for with but one or two exceptions it still was as when Archer published it more than twenty years ago. Mr. Hughes then went on to discuss the merits of three variations of the wet process, viz., the acid-bath system of Mr. Black, the heavily salted collodion of Mr. Elbert Anderson, and the wet bromide process of Major Russell. Although he had experimented very fully with all three methods, he could not take upon himself to say they would produce ultimate improvements, for it was only after long and patient trial that a trustworthy mode of working could be ensured. He had more hope of improvement resulting from following Mr. Anderson than Mr. Black; and probably when the bromide process had been practised as long as the ordinary bromo-iodized, it would be as thoroughly understood and appreciated. Mr. Hughes concluded by urging photographers to give more attention to original investigation as the best means of ensuring real progress in the practice of photography.

"A paper on Photo-collotype Printing was contributed at the same meeting by Captain Waterhouse, who described the uses to which carbolic and nitric acids might be put in the method, and gave other information of practical value. This paper Captain

Waterhouse supplemented by another at the December meeting, containing additional notes on the subject.

In December also Lieut. Chernside, R.E., who accompanied Mr. Leigh Smith in his tour in the Arctic seas, gave an account of photographic practice in high latitudes, and narrated several interesting details connected with the manipulations to be performed under very unfavourable circumstances.

"In January Dr. Mann exhibited a large series of photographs illustrating the eruption of Vesuvius of April, 1872, which had been collected by Mr. J. M. Black. Dr. Mann called attention to the perfect manner in which the phenomenon had been recorded by photography during the whole period of the eruption, and how graphically the course taken by the lava over the surrounding country had been depicted. A note on Sepia-toned Prints, by Mr. W. H. Watson, was also read.

"Notwithstanding the difficulties attendant upon holding the annual exhibition in a different *locale*, and at a somewhat earlier date than had been the custom for some years past, the gathering cannot be considered otherwise than as a perfect success, whether regarded in its artistic, financial, or popular aspect. The number of pictures hung exceeded that of the preceding year, while the ambitious dimensions of a large number of them was a matter of universal comment. These bold cartoons and magnificent enlargements were in great measure due to the encouragement given by Mr. Robert Crawshaw, of Cyfarthfa Castle, who has sought to develop a bolder and freer class of work by the offer of a series of handsome money prizes, thus rendering a service to photographic art which must be unhesitatingly recognized. From a financial point of view the result also was a satisfactory one; for notwithstanding the heavy rental of the Gallery in Pall Mall, and the many expenses inherent to moving into new premises, the expenditure was not in excess of the money-takings. So promising, indeed, have been the financial statements of the exhibitions for the past few years that it may be confidently anticipated that, instead of being a burden and expense, as in former times, the exhibition, if well managed, will ultimately become a source of income to the society. It was found impossible to keep a very accurate return of the numbers of visitors to the exhibition, because many friends were admitted accompanied by members; but it may be of interest to know that as many as 1,113 tickets were used by members of the society, admitting in all 2,630 visitors. Besides these, no less than 1,604 persons paid for admission; and therefore, inclusive of members, many of whom paid repeated visits to the gallery, the gross total of visitors could not have fallen short of 5,000. Among the more distinguished who honoured the society with a visit were their Royal Highnesses the Prince and Princess of Wales, who made a careful examination of the pictures. The success of the exhibition was materially assisted by the many important press notices which appeared in most of the daily and weekly newspapers.

"In one branch of photography marked progress may be said to have been made during the past year, viz., in the matter of enlargements. By adopting an improved medium in the preparation of transparent positives, the process of enlarging from the latter has been bettered, as demonstrated by the magnificent productions of Messrs. Spencer, Sawyer, and Bird, Mr. Edwards, and others.

"The preparations made for observing the approaching transit of Venus have led many photographers to turn their attention to consider the best means of applying the process for astronomical purposes. Dr. Krene, of Dresden, has made a microscopical study of different films, and pronounces an opinion that a collodion plate treated with albumen as a preservative is the most stable film that can be depended upon. His research is, however, confined to an examination of the film itself, and does not treat of the influence of various developers. There seems a marked inclination on the part of photographers to use the dry process on the important occasion, without having recourse to any intensifier whatever. The studies of Rutherford, Draper, and Lockyer upon the solar spectrum lead one to infer that photography must necessarily become indispensable in spectrum analysis, for it is only by a combined optical and chemical observation that a true record of results can be secured. Dr. Vogel, of Berlin, has recently confirmed the observations of Sir John Herschel and Mr. Robert Hunt in regard to bromide of silver being sensitive to all rays of the spectrum; and by employing preservatives differently tinted he makes the bromide film possess maximum sensitivity for different kinds of rays, according to the colour of his sensitive film.

"Among other foreign contributions to photography may be noted an exhaustive treatise on dry plates by Dr. Schnauss, of



Jena, and another by M. de Constant, of Lausanne. M. Léon Vidal's polychromic process, which may be termed rather a mechanical than a photo-chemical method of producing photographs in colours, has created some attention in France and in this country.

"The obituary for the year contains the names of M. A. Marion, to whom allusion has been made, and Mr. E. Bullock, of Leamington."

#### SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this society was held in the rooms of the Society of Arts, Adelphi, on Thursday, the 12th inst., Mr. F. HOWARD in the chair.

The minutes of the last meeting having been read and confirmed,

Mr. S. FRY exhibited and explained the working of an apparatus called the "Opal Glass Accelerator," consisting of a circular piece of opal glass fixed in a turned block of mahogany to be affixed on to the front of the lens. Mr. Fry stated that the effect was entirely different to the use of coloured glasses. He exposed the sensitized plate to light passing through the opal glass before exposure to the sitter, and which considerably shortened any subsequent exposure.

Mr. FOXLEE had shown, some time since, a negative which had only required one-half the necessary exposure, having previously been exposed to diffused light.

Several members then gave their experience respecting the transmission of both *white* and *coloured* light, before and after exposure to the object; Mr. Fry's experience being that the preliminary exposure was the best.

Mr. Brooks had found, when working in a tent, that after developing in front of an *orange*-coloured glass, great advantage was gained by continuing development before a *lemon*-coloured glass.

Mr. HOWARD stated that a very good imitation of opal glass might be made by a mixture of collodion and negative varnish poured on a clean plate of glass.

Mr. ALDRIDGE then read a paper entitled "My Troubles in Taking Direct Large Heads" (see p. 86), exhibiting two 15 by 12 prints of heads about five inches.

A very interesting conversation ensued respecting horizontal baths, wooden trays, and length of exposure, &c; after which—

Mr. H. GARRETT COCKING read a paper, "My Experience in Taking Large Direct Heads" (see p. 87), also showing two 15 by 12 prints of heads about five inches.

After a desultory conversation—

The CHAIRMAN remarked that some of the difficulties occurring to Mr. Aldridge arose from using a vertical bath coated with pitch and rosin, which had been avoided by Mr. H. G. Cocking, who had produced clean pictures by at once using an ordinary porcelain horizontal bath.

Votes of thanks were then passed to Messrs. Aldridge and H. G. Cocking for their papers.

It was announced that at the next meeting in March Mr. S. Fry would read a paper "On Studios," illustrated by a working model.

The proceedings then terminated.

#### EDINBURGH PHOTOGRAPHIC SOCIETY.

THE third popular meeting of the season was held in Queen Street Hall, on Wednesday evening, the 11th inst., when Dr. HUNTER delivered an interesting lecture on "India: Its People, Architecture, and Antiquities," illustrated by a large number of fine lantern pictures. The hall, as usual, was crowded in every part.

Dr. JOHN NICOL, in introducing the lecturer, said that it was very gratifying to the members of the society that, although those "popular evenings" had been carried on for so many years, they had not only not fallen off in interest, but, judging from the large audiences and the increasing demand for tickets, were increasing in popularity. As the subjects of exhibition were not confined to the beaten tracks of country, but extended to wherever good photographs could be obtained, it would easily be understood that the committee had often much difficulty in finding lecturers sufficiently acquainted with the subjects. They were, however, peculiarly fortunate to-night in having got Dr. Hunter, who, from a residence of over a quarter of a century in India, and from his intimate connection with art during a larger portion of that time, and also from the fact that he was himself an artist of no mean ability, was eminently fitted for the duties of lecturer on the subject.

Dr. HUNTER began by giving an interesting description of

the social condition of the inhabitants of India, and the influences of missionary and educational efforts on those on whom they had been brought to bear, giving special credit to several maharajas, who, he said, were men of superior attainments, and who could take a place alongside the nobility of our own land, without any cause for being ashamed.

The various styles of architecture were explained and admirably illustrated, and the taste and ability in designs were shown to be such as to put our manufacturers on their mettle if they wished to compete with them in the manufactures in which they excel.

The lecture, which lasted over an hour and a half, was listened to with marked attention, and the large number of illustrations were much admired.

On the motion of Dr. Thompson, a hearty vote of thanks was given to the lecturer.

### Talk in the Studio.

**FIXING VANDERWEYDE FINISH.**—A correspondent (Mr. Tilley, of Stafford) sends us the following method, which he has found useful in clearing-up and fixing the colour applied in the Vanderweyde and similar processes. He says:—"As soon as the picture is finished and gummed, pour plain collodion over the entire surface, and when dry the picture can be sent through the post without any danger of being rubbed so as to remove any colour. I am aware that collodion has been used over photographic prints before, but not, I think, over the Vanderweyde pictures."

**PAPER NEGATIVES.**—The same correspondent sends a suggestion in relation to paper negatives. He says:—"Photographers who use paper negatives will find it a great advantage to mount them on glass before printing from, and the retouching can be done with great care, and the prints from them will be sharper, as the negative is then quite flat. Mount them on the glass with warm starch, and let dry."

### To Correspondents.

THE PHOTOGRAPHIC SOCIETY.—We have received a large number of letters in connection with the late proceedings of the Photographic Society, the insertion of which would make a much more serious demand on our space than, in justice to our general readers, we can devote to the subject, as, although the society is a large one, and has done much for the art, its total members do not represent a tithe of our readers. We give three or four letters containing moderate counsels, and we here condense extracts from a few others. "A MEMBER OF THE COUNCIL" calls our attention to the fact that the "letter published in a contemporary on the 23rd ult., as being the letter sent to the council with the second requisition, is a garbled document, a sentence of an insulting character to the council being carefully eliminated from the copy given to the public eye." "A BONA FIDE MEMBER IN THE NORTH" thinks that every photographer in the country is sufficiently indebted to the Photographic Society for its influence in the art to be interested in a discussion affecting its fate, especially at a time when it has been "subjected to a cowardly attack from within its own body," and when its independent members require encouragement and support. He says:—"I am astonished at the audacity of Mr. Hughes and the other requisitionists, who have, as I see by your last issue, brought all the terrors of ruin, anarchy, and revolution into the hitherto peaceful fold of the Photographic Society." After some comments on "the indecency of the allusions to the turf, which might have been expected from a pot boy," he asks, "What could be more insane as a suggestion than that the council, under whose fostering care the society has advanced to a position of successful usefulness never before attained, would put forward three members to serve in a committee who would suggest the least thing which, in their honest opinion, was contrary to its best interest? Why should Mr. Hughes fear that the council would do this?" But he adds, "The improvement of the laws was little to them, so that they might gain a victory, even if they established a reign which should be one of terror." The requisitionists having, he observes, "succeeded, with success comes the responsibility. Their leader is now for a moment the head of the government of the Photographic Society; and holding that position, he must treat with the demands of all members of the society. I do not say he must grant all their demands, but he must treat with them one way or another; and I believe that in this fortunate necessity lies the weak point which will give way when the strain comes, and precipitate the requisitionists to the position they deserve to occupy. They must either grant proxy voting to the country members, or, in letting it alone, they must more clearly than at present define the rights—or rather want of rights—which we at present enjoy, and which I, for one,

have till now been quite content to enjoy. If, then, they grant proxy voting to the country members, I have no hesitation in saying that at the first vote the malcontent ministry will be outvoted beyond all salvation. They will have nearly three hundred against twenty-eight; and some of the twenty-eight will be disgusted with their leaders before then. But if this leader or leaders go for the safer plan (?), and keep the vote to personal attendance, so as to have twenty-eight always at their back, will not the country members follow the lead of their president and council, and resign in a body? I can answer for half a hundred or more who will, and I doubt not the rest, or the bulk of them, will follow suit; for why should they not? They have the best president who could preside over them, and the best council that ever pulled a society through its difficulties, to guide them to future success, honour, and usefulness." The "BONA FIDE MEMBER" concludes by saying:—"I would, however, strongly advise the members generally not on any account to withdraw their names from the list at present, as the proxy vote will give them a better chance of showing Mr. Hughes what they think of him than they can at all express by running away in a hurry; and if the proxy vote is not accorded, they will then have a dignified ground on which to withdraw. But I do not think we shall be driven to this necessity. I do not think that, now that the self-seeking of the requisitionists has become manifest, they will have supporters enough to enable them to carry out much more mischief; and when they fail, and the society has regained its equilibrium, and its members had time to look around them after the storm, I, for one, do not envy the feelings which must inevitably crowd themselves on the minds of those gentlemen who, having held positions in the council of the society themselves for years, and having then found no need for amendment, have, now that their names were not proposed again for election, out of a mean self-love of which I should not have thought them capable, plotted the overthrow of the society itself to its very foundations." "AN ENQUIRER" asks us if the Photographic Society has become a trades union, as he affirms that there are among the six officers just elected five dealers or workers for the trade, and in the committee just elected six similarly engaged; and he then proceeds to enumerate names. We think it undesirable to obtrude into this unhappy agitation more of the personal element than we can help. Some other correspondents on the subject are answered elsewhere.

J. W.—We hope shortly to lay before our readers generally some further details from Mr. Fry of his glass house experiences. A full description of his studio would occupy more space than we can devote to an answer in this column; but we hope to publish the description shortly.

T. HART.—The amount of silver taken up by each sheet of albumenized paper depends upon the proportion of chloride in the albumen solution used in preparing the paper. Suppose chloride of sodium were employed, then each grain of chloride in albumen on the paper would take, in round numbers, three grains of nitrate of silver in forming chloride of silver on the paper, a little more silver would combine with the albumen, and a little more would remain on the paper as free nitrate of silver, and the proportion used in the latter position would depend somewhat on the strength of the nitrate solution. You will see that the proportion of silver used must therefore depend upon circumstances. With many commercial samples of paper it is customary to allow one ounce of nitrate of silver for each quire of paper. Of course ready sensitized paper will cost more than paper sensitized at home; but still, under some circumstances, it is economy to use the ready sensitized paper.

MELBOURNE.—You can obtain lime water of most chemists; or you can make it by getting some clean slaked or unslaked lime, and agitating it with water. Only a very small portion is dissolved, and the lime will last a very long time if you keep adding fresh water.

L. E. D.—We cannot suggest any plan whereby country members can now use any influence in modifying the action of the society. We have not space for the insertion of letters merely of condemnation, which can serve no purpose. We do not know anything of the steps which may be taken in filling up all the vacant offices. Mr. Pritchard, the secretary, has resigned, and, so far as we know, none other is yet appointed.

DEAF-AND-DUMB ARTIST.—We should prefer No. 2 for your purpose. You will see your formulae inserted on another page. Thanks.

A COUNTRY AMATEUR.—You will see that the question of legality is raised on another page. We cannot with certainty say. The issue is, as you remark, both "lamentable and discreditable," but at present we see no remedy.

W. EVANS.—The project you describe is really a lottery, and, as such, is illegal; but whether, in a small matter quite within your own business, the law would interfere, we cannot tell; probably not, but still you would really become amenable to the law if it were put in force.

E. H. SKEIGHT.—We hope shortly to publish full particulars. At present we have published all the information in our possession.

P. A. T.—Unfortunately, we have no knowledge of fire offices or their practices; but we should imagine that the majority of them would have no objection to insure a photographer's studio, &c. 2. The usual size of each half of a stereoscopic slide is about three inches square. The precise proportion of the figure in stereoscopic portraits is a matter of taste. 3. We do not know anything of the town in question, or its photographic prospects. We should think the best plan would be to spend a few days in the town, looking about and enquiring.

R. E. P., M. D., and L. L.—See article and letters on the subject.

IGNORAMUS.—Your negative arrived in fragments. So far as we can judge from examining them, the stains of which you complain are the well-known matt silver stains, upon which many articles have been written, which you will find in back volumes of the News. Such stains proceed from many causes; but there are two or three most common. One of the most usual causes is the use of a horny collodion upon the surface, of which the silver has a tendency to run in greasy lines, and to dry readily, producing the matt silver stains in question. Another cause is lack of scrupulous cleanliness in the inner frames or corners of the dark slide. Frequently wash out the slide with clean water. Let the plate rest on pieces of clean blotting-paper. Immerse the plate before the film is too thoroughly set or dried. If these remedies fail, look up and read articles on the subject in back volumes.

J. BARRATT.—The varnish has arrived. We shall have pleasure in trying and noticing it shortly.

Several Correspondents in our next.

## METEOROLOGICAL REPORT FOR JANUARY, 1874.

BY WILLIAM HENRY WATSON.

Observations taken at Braystones, near Whitehaven, 36 feet above sea level.

1874 January Date.	Morning.	Noon.	Night.	Direction of Wind at 9 a.m.	
1	44°	48°	44	S.	Rain commenced about 4 p.m., with strong wind.
2	44	41	40	N.W.	Fair all day. Gloomy.
3	32	36	36	N.E.	Snow from 9 a.m. to 12.30. Rain early in the morning.
4	36	38	36	S.	Heavy rain, and strong wind at night.
5	35	40	40	—	Fair all day. Bright, clear, and sunny.
6	40	44	40	W.	Fair all day. Gloomy.
7	40	42	40	S.W.	Heavy rain and wind at night.
8	40	40	41	S.	Rain a.m. and p.m.
9	41	46	39	—	Fair all day. Clear.
10	31	40	36	N.E.	Rain early in the morning. Meteor at 11.45 in N.*
11	40	44	42	N.	Heavy rain at night.
12	44	41	39	N.W.	Shower of rain this forenoon.
13	41	44	46	S.W.	Fair all day. Gloomy.
14	46	46	44	S.W.	Fair all day. Gloomy.
15	47	48	40	S.W.	Rain a.m. and p.m.
16	37	38	40	W.	Rain and snow a.m. and p.m. Aurora 10.15.
17	38	41	34	N.	Rain this morning. Gloomy.
18	41	46	42	S.W.	Rain a.m. and p.m. Glimpses of sunshine in the afternoon.
19	41	44	40	W.	Fair all day.
20	45	48	46	W.	Rain a.m. and p.m.
21	44	48	47	S.W.W.	Fair all day. Gloomy.
22	41	46	40	W.	Drizzling rain a.m. and p.m.
23	44	46	42	W.	Drizzling rain this forenoon.
24	41	38	42	S.W.	Heavy hail shower at noon.
25	41	41	42	W.	Rain this afternoon.
26	42	48	40	W.	Hail shower this morning. Rain a.m. and p.m.
27	38	41	40	S.E.	Clear and sunny all day. Drizzling rain at night.
28	46	46	42	N.W.	Drizzling rain this afternoon.
29	41	41	43	S.E.E.	A few drops of rain this afternoon.
30	41	45	40	N.W.	Fair all day.
31	46	48	40	W.	A little rain at night.

The following are taken from the above data:—

	Mornings.	Noons.	Nights.
Maximum temperature during the month	47°	48°	47°
Minimum ditto ditto	32	36	34
Mean ditto ditto	41.1	43.7	40.7

Number of wet days during the month were ... 23  
 Number of days on which no rain fell ... 9  
 Number of fair days on which it was gloomy ... 6  
 Ditto ditto ditto sunny ... 3

The wind from S.W., W., and N.W. prevailed.  
 February 13, 1874.

\* See Symon's *Meteorological Magazine* for February, 1874.



## The Photographic News, February 27, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

THE PHYSICAL SOCIETY—THE ELECTRIC LIGHT IN PHOTOGRAPHY—TINTING THEATRICAL PORTRAITS—THE CAMERA IN COURTS OF LAW.

*The Physical Society.*—A little while back we announced in these columns that steps were being taken to form a new society, to stand in the position of twin-brother to the Chemical Society, and to which the name of Physical Society was to be given. This body has now been created, having sprung into being upon a very firm basis, apparently. Dr. J. H. Gladstone, who, from the commencement, has shown a very deep interest in the movement, has been chosen the first president, with Prof. W. G. Adams and Prof. G. C. Foster as vice-presidents. The secretaries are Prof. E. Atkinson and Prof. A. W. Reinhold; and among the council are the well-known names of Prof. Guthrie, Mr. Crookes, Prof. Goodeve, and others. Work will be commenced forthwith, but until the number of members is more considerable, no steps will be taken to obtain a charter. As we have already pointed out, the transactions of the Physical Society will have much to interest photographers, and we do not doubt but that we may obtain many valuable papers from that source, to place before our readers.

*The Electric Light in Photography.*—Artificial light has received but a very limited employment for photographic purposes, if we except its use for enlarging. Sunlight is so much more efficient, and so much cheaper, that circumstances need be very unusual indeed to call for the employment of the electric or oxyhydrogen or magnesium lights. The electric light was used many years ago by the Woodbury Photo-Relief Printing Company, to a limited degree, for printing the gelatine images, so that the operators might be independent of sunlight; and in Paris and elsewhere, magneto-electric machines, worked by means of small engines, have also been employed. In New York, however, for the printing of photo-engravings for *Leslie Journal*, there is a Wilde electric machine in constant use at the present day, and most satisfactory accounts are given of its efficiency. The electric light, as our readers know, is produced by a circuit of electricity being completed between two points close together (usually of carbon), and the cost of maintaining these, together with the expense of the steam or gas power employed for grinding the magneto-electric machine, constitutes the sum total of expenditure. The power of the electric light as compared to sunlight is very small. For instance, at eighteen inches from the carbon points the illumination is only one twenty-fourth as intense as sunlight on a bright summer's day; or, in other words, a photograph which would take ten minutes to print, or become blackened in sunlight, requires to be exposed to the action of electric light for a period of four hours to bring about the same result. Mr. Wilde estimates the cost of producing his electric light at the rate of fourpence an hour.

*Tinting Theatrical Portraits.*—There is one branch of photographic portraiture in which tinted albumenized paper may be employed with advantage. Where fancy costumes or theatrical characters are represented, such as are made to look best by gaslight, and which, as a rule, appear glaring and tawdry by the light of day, the employment of coloured albumenized papers does not come amiss. How very pale and chalky most of the robes and dresses that clothe actors and actresses look when rendered in a photograph! The searching daylight in the photographer's studio has, in truth, a tendency to deal rather harshly with drapery that appears so bright and charming at night; and thus it is that these pictures are never altogether successful. By judiciously choosing a tinted paper suitable to the subject, we think much might

be done to improve theatrical and fancy portraits, and give back to them some of their real character; or, better still, probably, would be the method of tinting the picture, after printing, by means of normal collodion to which a little (a few drops only) of aniline dye, thinned with alcohol, has been added. After the print has been mounted, touched, and rolled, it is held by finger and thumb, and a little methylated spirit poured over it; then the tinted collodion is applied, which runs uniformly over the whole surface, and dries rapidly upon the picture, covering the same with a pretty transparent film of colour. If desired, after the spirit has been poured on, pieces of thin paper roughly torn to shape may be placed over any portions of the portrait which are to be left white (face, arms, dress, &c.), the collodion being afterwards poured upon these shields, which adhere to the print when the latter is moistened with alcohol. Before the collodion has quite set, the bits of paper are removed, and the film dries up without any perceptible outlines.

*The Camera in Courts of Law.*—For multiplying legal documents, and letters upon which much value is placed in a court of law, photography comes in most aptly. In cases, when it is a question of peculiar formation in the words of a letter, of mis-spelling and other orthographical defects, the camera is the only trustworthy instrument that can be employed. In case the original is not forthcoming, photographic copies are proofs which cannot be gainsaid, but carry conviction with them against all the letter-press in the world. Why, therefore, should we not have a photographic department attached to our law courts, where documents in custody of the court could be copied as soon as they are deposited? The originals need then never be shown, while at the same time there would be no reason why properly authorised persons should not be supplied with these authentic publications, instead of merely a letter-press copy of them; for, as we have pointed out, it may not be the substance, but the words themselves, and how they are written, which is the most important. Of course a department of this kind would have to be properly organized, and conducted by responsible persons, as otherwise the benefits derived from it might not be altogether unalloyed. All documents and copies made would be in the custody of the court, so that no one could tamper with them. In the same way photographers attached to the department might be dispatched to various parts of the country, to obtain photographic evidence of places and things—services which, if undertaken by private individuals, might not be so fairly rendered, for, by being prejudiced one way or another, a photographer, as we all know, can influence a result, where it is not a merely mechanical rendering of a subject. There can scarcely be a doubt that before many years elapse photography will receive an appointment in our judicial departments, in the capacity of a recorder of evidence.

### FRENCH CORRESPONDENCE.

In presenting to the French Photographic Society some newer specimens of polychromatic photography, which I spoke of in a recent letter as having attracted much attention, M. Leon Vidal mentioned certain modifications which he has made in the process. To-day I have received from the able inventor a communication concerning these recent improvements, and mentioning still another, touching the production of the various clichés required for the formation of the polychromatic images.

In his first memoirs on the subject M. Vidal said, in a general manner, that it was necessary, in order to produce a polychromatic impression, that there should be as many different clichés as there are different colours required for building up the image by superposition. This part of the process has been the subject of many objections; it was a complicated matter, and a costly one, and it was, moreover, next

to impossible to obtain clichés of precisely the same value as the original. Finding such objections really a hindrance to the process, M. Vidal has worked out a plan by means of which the clichés may be produced in a much more simple manner.

The problem to be resolved was, how to employ only the original negative to serve for all the impressions, and how, at the same time, this cliché mère, so to call it, might be employed without submitting it to any retouching, or tampering with its surface in any way. And these conditions M. Vidal thinks he has been able successfully to comply with in such a manner as to satisfy the most exacting. He produces all his reserves upon pellicles similar in composition to the material known as leather collodion (*collodion cuir*). Those films are placed in close contact with the cliché mère, and the covering up or reserving of certain parts of the negative is carried out upon the pellicle, there being one for each colour, and the negative is printed successively with the different reserve pellicles against it, according to the colour to be produced. For small negatives, sheets of mica, very thin, may be used instead of sheets of leather collodion.

The preparation of the pellicle clichés in question is conducted as follows. M. Vidal commences by placing a pellicle of the requisite dimensions against the cliché mère, fixing it at three points, which correspond to three others on the negative. Two strips of paper, folded across the back and fixed with gum, keep the pellicle in its place against the negative, without any fear of its shifting. The pellicle is then worked upon, and covered with pigment to make it into a reserve, while the negative itself is untouched. In this way as many reserves are made as desired, a fresh pellicle being applied to the negative in every case, until at last as many pellicle clichés have been secured as there are tints required, each pellicle corresponding to a certain colour. By this plan of operating the original qualities of the negative or cliché mère remain unimpaired.

M. Vidal recommends the employment of clichés produced by the carbon process in preference to those obtained on dry collodion plates by contact with a positive on glass. The image obtained in the latter case is rarely of a clear nature. In fact, the film of collodion being more or less transparent, there is a diffusion of light, which cannot take place if the carbon process is employed, the bichromate mixture charged with black pigment being more uniform, and constituting a better screen. The black film prevents any diffusion of light through those portions of the film which have been acted upon.

Another important advantage of these carbon clichés on pellicle is, that they may be printed either from one side or the other, and a large number of them may be kept, stored up in a blotting pad.

A Marseilles photographer sends me a communication regarding sulphocyanide of potassium as a fixing agent. One of the defects of fixing by means of this compound was that the prints often assumed a dull red tint, and this fault M. Cayol removes by a very simple modification in his method of employing the material. He prepares two solutions of it of identical composition, each made up of:—

Water	...	...	...	100 parts
Sulpho-cyanide	...	...	15 to 20	..

Ammonia, sufficient to render the solution slightly alkaline.

The prints are plunged into the slightly alkaline solution No. 1 for a period of four or five minutes. They are then taken out and submitted to a slight washing in water, and then plunged into solution No. 2, where they remain for another two or three minutes. After this, the prints are washed for an hour, and are then finished.

To be quite sure that the prints have been freed from every trace of sulphocyanide, a few cubic centimetres of a solution of sulphate of sesquioxide of iron is poured into a glass containing water which has been used in the last

washing operation. If no red tint is observable, it is proof that the washing has gone far enough, and the prints may then be deemed permanent. The solutions of sulphocyanide indicated above are available for a very long time if one only takes care to free them from any silver which they may contain, by placing in them, from time to time, sheets of zinc, and filtering the liquid before using it again.

Another correspondent tells me of a method he employs for producing bust pictures upon a black ground, by means of clichés of a perfectly graduated nature. The plan is simply to place in the camera, five or six centimetres in front of the sensitive plate, an oval two or three centimetres in measurement, cut out of cardboard or paper. In this way the negative produced will yield a black ground most perfectly graduated.

The same correspondent suggests an idea for correcting very hard negatives—a plan, by the way, which appears to me analogous to that employed by M. Denier, of St. Petersburg. A cliché which yields very hard prints, having been varnished, is covered with collodion on the reverse side, and it is afterwards placed in contact (without being immersed) with an ordinary negative bath by means of a suitable arrangement. The negative is then exposed again for a second time, diffused light passing through the image; or the plate is put into the camera and exposed at a white or grey background, put out of focus. A very short exposure is given, and the development follows with a weak iron solution. The second film of collodion is feebly acted upon through the clear parts of the negative, and proportionately in the other parts, the thickness of the glass itself softening down the result. In this way a hard portrait negative may be transformed into a soft cliché.

ERNEST LACAN.

## THE PRODUCTION OF ENLARGED LANDSCAPE NEGATIVES.

BY J. BRIER, JUN.\*

It is not necessary for me to say anything about the great advantage of being able to move about more easily, cheaply, and with less annoyance with a small photographic outfit than with a large one, as it is too well known. I do not wish to be understood to say that enlarging is easier than taking a moderate sized negative direct, as it is not so; for, at the least, three good plates have to be worked instead of one. The great advantage I consider to be that the tourist can bring the work home, where there is, or should be, greater conveniences, and so make himself less of a slave during what should be a pleasant out, if the weather be favourable.

In the first place, let us consider the small negative. The definition must be perfect, especially in the two corners of the foreground. It must be good in a pictorial sense, for though a large picture is superior to a small one, still, if it be not of a good subject, the smaller it is the better. The negative must have a full amount of detail in the shadows, and be vigorous without being too intense in the lights, only a small portion of which should be quite opaque, and this, if possible, should cut sharp against a deep shadow to give brilliancy to the picture. The negative must not have been printed from too often. If one which has been so used be examined with a magnifying glass it will be found to be full of minute black spots, caused by silver from the paper getting into the pores of the varnish.

Now a word about negatives to be taken for the purpose of enlargement. A good camera must be used, with the best plate glass, the full size of the dark slide. No carriers should be used, as, in my opinion, they warp, and have a great deal to do with imperfect definition. It is of the greatest importance that the lens be the very best that can be obtained, and "especially it must cover the plate well." I find, on looking over my old eight by five negatives with a magnifying glass, that though they are sharp enough

\* A communication to the Manchester Photographic Society.



for printing from, and as sharp as possible in the centre of the plates, still there is such a falling off in the definition towards the margins that they are unfit for enlargement. They have been done with opera-glass lenses and the front combination of a portrait lens. The process used should be one which gives a crisp image. Collodio-albumen comes first on the list; then the bromo-iodide dry plates, such as gum-gallic; next, wet plates, and those dry ones with a crystalline preservative, such as tannin. It is advisable that a magnifying glass be used in focussing. Plates should not be varnished until a good transparency be obtained. Collodio-albumen will do without, and the other dry plate and wet negatives should receive a coat of thin albumen while they are wet, which should be dried before the fire, as in varnishing.

I had almost forgotten to say anything about the size of negative suitable for enlargement. I think it best not to make them too small, as they not only have to stand more enlargement to attain a given size, but they are less fitted to do so; for, as the size of the plate decreases, it is more difficult to judge of the quality of the image. I should recommend not less than half-plate, nor larger than whole-plate size, the size of seven and a-half by five inches, commonly used by amateurs, being very suitable.

Now for the transparency. It should be made by contact printing on a plate larger than the negative, and of the same kind of glass, but thinner, for safety to the negative; for all but negatives on plate, thin, flat crown is best. The transparency must be full of detail in lights and shadows, and not too intense; it may be made by the Autotype or collodio-bromide process, but transparent albumen films seem to find most favour at present. I will describe the albumen process as I have last practised it, and I must not omit to say that I got a great deal of information from a paper, published about the middle of last year, in both the photographic journals, by Mr. Carbutt, an American gentleman. Take the whites of four fresh eggs, and add thereto ten minims of glacial acetic acid in half an ounce of water. Stir well together a minute or two, leave half an hour, then strain through a piece of coarse white calico, and next through a piece of the finest calico; then add fifteen minims of strong liquid ammonia. Dissolve twenty grains of iodide of ammonium, ten of bromide of ammonium, and ten of sugar-candy in two drachms of water; add to the albumen, and stir it well. Filter through a piece of moistened sponge cut to the shape of a cork, and fitted in the neck of a funnel. Polish the best side of a clean plate with a few drops of the albumen, using a piece of clean calico, warm the plate slightly, use the dusting brush, and coat with ripe, stractureless, and thin bromo-iodized collodion. As soon as it is set, put it in a dish of water, rock it until the plate is no longer greasy, then wash well under a tap, for if the ether and alcohol be not entirely washed out the albumen is coagulated, which causes marks in the film. Now drain two or three minutes, with the bottom corner resting on blotting-paper; then coat with the iodized albumen; let the plate rest horizontal for three or four minutes, then flow the weak albumen into a bottle to be used for the first coat of future plates. Coat with the strong albumen four times, letting it flow from a different corner each time, and from the one where the collodion was poured from last rest this corner on a thick pad of clean blotting-paper, the top corner against a clean plate box, with the film inwards. Let it rest thus for an hour, then dry off before a clear fire, and, when nearly cool, immerse half a minute in a thirty or forty-grain aceto-nitrate bath, moving it about all the time. Then wash well, immerse in a weak solution of salt, wash, and flow with a three-grain solution of gallic acid, or, what is better, a strong infusion of black tea. Now leave the plate on blotting-paper as before, and if the room be tolerably warm it will soon dry. It is important that the plate be kept quite dry, or it will blister during development.

For exposing the plate under the negative I use one of the Autotype Company's printing frames, with a spring back in one piece only. I lay the negative in the centre of the plate glass (which, by the way, is nearly half an inch thick), then the albumen plate, taking care that the film side is next to the negative; next, two or three thicknesses of orange tissue paper; and, lastly, sufficient printing pads to give the required pressure. The pads must not overlap the negative, or the larger albumen plate will be broken; then the back is shut down until caught by the springs. Lay a focussing cloth over the front of the frame, go into the light, and make the exposure to the north sky, which varies from two to fifteen seconds for alkaline development, the average exposure to a blue sky being five seconds at present; but I think it useless to lay down any rule, as every one must find out his own exposures. I have no doubt that the magnesium lamp or the sciopicon would be the best thing to make the exposure with, as the light is always the same, and the exposure once found the density of the negative would alone have to be considered. The transparency would also be quite sharp, even if the contact of the glass were not perfect, so doing away with the necessity of using plate glass.

Now we come to the development. I prefer the alkaline method, for it gives an image of more even density over the plate, and freer from surface stains than when a hot solution of acid pyro and silver is used. Make a solution containing ten grains of bromide of potassium and one drachm of liquid ammonia to an ounce of water; take the plate out of the frame, flow it with warm water, and rest it horizontally while three grains of pyro are dissolved in an ounce of hot water, to which add five minims of the ammonia solution, and flow over the plate. If the image do not appear in about a minute, add more ammonia very gradually, and if the exposure be right the proper amount of detail and density will be obtained without intensification; but if the plate be over-exposed the development must be stopped before all the details in the lights are out, and intensified with two grains of pyro, one grain of citric, and ten minims of acetic acid to the ounce of water. Flow over the plate, and then add three or four drops of a ten-grain solution of nitrate of silver. If the image is very fully exposed use more silver, but if it have not sufficient detail in the lights warm the solution, and keep the quantity of silver as low as possible. If a slight fogging occur at any stage of the development, flow the plate with water, and rub lightly with a tuft of carded cotton. The fixing must be done in a half saturated solution of hyposulphite of soda, made milky with acetic acid. When developed by the alkaline method these plates require no toning.

And now we come to making the enlarged negative. I shall not say anything about the camera or enlarging room, but confine my remarks to the lens and process. First, what is the right sort of lens to use? I think that for anything containing no straight lines a single lens of not less focus than the length of plate to be enlarged will give the "sharpest" image. The lens must be reversed, or the marginal definition is very poor. A doublet lens, having both the combinations symmetrical, is a very excellent lens for enlarging, as it works quickly. In my opinion, there is none worse than a portrait lens, which, however, will do pretty well if it be a good one of moderately long focus, with a small stop, and reversed, which I must explain, for the benefit of beginners, does not mean turning the lenses round and in their cells as I once did, but turning the tube end for end, so that the cap of the lens is next to the larger plate.

And, lastly, the process (of course there is nothing so convenient as the wet process) is developed with a fully acid, weak iron solution, to which you can add some strong solution if the plate be under-exposed; but if the lens be quick, the light good, and the transparency thin, I think the best results can be got on the ordinary collodio-albumen plates with alkaline development.

## MY TROUBLES IN TAKING LARGE DIRECT HEADS.

BY R. W. ALDRIDGE.\*

ALL being now ready for the venture, we determined to try one of the 15 by 12 plates. Having fitted a rounded wooden top to the neck of an earthen jar, and stretched a piece of flannel over it, we were enabled to coat the plate balanced on the top, or to develop without any difficulty. Our first plate, however, was one mass of fog, with a most ghostly image dimly discernible in the centre—the mere shadow of a shade! There was evidently something amiss with the bath, but it was difficult to say what, as it seemed all right by the usual tests. I consulted my friends: one advised boiling, another the precipitating of the newly made bath, and a third that it should be let alone till it came right of itself. With two or three days' sunning, however, and the addition of a little nitric acid, I got rid of this trouble. It was nevertheless evident, from the brown colour of the bath, that the silver was gradually dissolving the mixture of tar and pitch with which the interior was coated. I was obliged to filter nearly every day, and was much troubled with pinholes. Eventually I found it expedient to give up both bath and dipper. I procured a large gutta-percha cradle bath, capable of taking a plate 17 by 23, and have found it answer very well. For my next dipper I procured a strip of ground glass  $\frac{1}{2}$  inch thick, 3 inches broad, and 29 inches long. I got the glazier to cut off two pieces about  $\frac{1}{2}$  inch broad from the end. These two pieces, after being ground so as to retain the plate, were fastened one at each end with marine glue. This dipper has done me good service. I submit it for your inspection. As you will see, it is a substantial article, and not to be broken by a trifle. I confidently recommend the plan to any one who requires a dipper of extra size. The cost was sixpence.

Having thus got over the mechanical difficulties, I resolved no longer to do the thing by halves, but to try the large size. Here I met with the last and greatest trouble of all: none of my models came up to the required size. I contend that a majority of the large direct heads exhibited were really, however unconsciously on the part of their authors, enlargements upon the natural size of the models, more especially the female faces. In order to show that I am not alone in this opinion, and that they produced upon others this disagreeable feeling of exaggeration, I will give you a few extracts from the critiques upon these heads that appeared in the daily press. I have avoided, as far as possible, all personal allusions.

*Globe*, October 24th.—“Owing to the fact that prizes have been offered for large-sized heads from nature, the exhibition is full of ambitious effort; it is also full of failure.”

*Daily News*, October 25th.—“The efforts of the artists who apply themselves to taking large pictures direct deserve praise; but in the meantime these portraits, when they get to life-size or beyond that, are far from satisfactory.” Another extract from the same says:—“The heavy masses of black shadow, the ghastliness of the white surfaces (in some cases the complexion that of a corpse), and the general look of hardness and exaggerated prominence of feature, show that the indefatigable efforts of artists and amateurs have not yet been followed by success.” Further on the critic mildly alludes to the pictures as “these gigantic nightmares.”

*The Daily Telegraph*, October 25th, says, speaking of Colonel Wortley's heads:—“These and one or two others from the hand of the same distinguished amateur are of heroic rather than life-size.”

But I will not cull any more of these flowers of rhetoric that so plentifully bestrew the critical garden. I have, I think, quoted enough to show that these large heads con-

veyed to what I may call the outside world an effect of exaggeration, not merely in the features, but in the sizes of the heads themselves. Do not think because the difference in size is small—merely an inch or so—that therefore it must be of trifling import; the difference between success and the want of it is often owing to the presence or absence of what appears of small importance. It is the *little more* or the *little less* (as the Italians say, “Il poco più o il poco meno”) that makes all the difference. One thing was unanimously allowed: that the smaller series of 5½-inch heads was decidedly superior to those competing for the first prize. I think this may be easily accounted for. In the first place, there is no lens that is really equal to the work of taking, without exaggeration, and in such a time as to render the work really practicable, a life-sized head. It is pretty generally acknowledged (if anything in connection with photography can be said to be settled) that the D lenses of Dallmeyer are those best suited to large heads or figures. They have the disadvantage of being exceedingly slow, but have considerable flatness of field, while an attempt, at least, has been made, by diffusion of focus, to overcome that greatest of all objections to the use of large lenses—the want of depth. The disadvantage attending the use of single or landscape lenses being the coarseness of the rendering and loss of half-tint, I used a 7D (that is, a 5-inch) lens, with a back focus of 24 inches. This is the largest size generally made; in fact, I never heard of any one who has a larger, except Mr. Crawshaw, who uses an 8D. To obtain a head of the size of life, I had to bring the front of the lens within 5 feet of the sitter. This was bad enough, for exaggeration of the more prominent parts follows as a matter of course. The principles of perspective are violated. The human eye can only take in at one time what is contained in an angle of sixty degrees. If I approach so near to an object as to command a greater angle of view, distortion follows exactly in proportion as that law is violated. Dallmeyer, in his pamphlet on lenses, observes:—“What is the proper distance at which to place the subject from the lens?” In answer, it may be safely asserted that it should, as a rule, be not less than 12 feet, nor perhaps more than 24 feet; for if less than this the resulting picture will probably be defective, both in definition and perspective, because the lens producing it will be of too short a focus. Thus you perceive that while the maker of the lens cautions me not to go within 12 feet, I am obliged, in order to get a life-sized head, to bring the lens within 5 feet.

Then came the other trouble I have spoken of. I placed the model (a lady), and went with my strip of cardboard to measure her face, as I have explained in a letter in the *News*: exactly 6½ inches. This, of course would not do, but by moving the lens about a foot nearer to the figure I got the right size, but everything else was wrong. Fancy, too, the huge Cyclopean eye of the lens staring into a lady's face at less than 4 feet distance, and you may imagine the elongation of the facial muscles that followed. I next tried my assistant, who is about 5 feet 10 inches in height: a face of 7 inches. I tried several others, but they were below the standard. At last I found exactly what I wanted, so far as size was concerned—a face of 7½ inches. As my friend was wounded at Waterloo, where he was a captain of cavalry some fifty-nine years since, he can scarcely be called a young man, but having sat without flinching for smaller portraits we determined to try the life-size.

You will scarcely be surprised to hear that, after three sittings, varying from three to five minutes (for I had taken out the stops, so as to approach as nearly as possible to the instantaneous), although my sitter had borne the infliction with the patience of a martyr, there were signs of movement in every one. My friend would not acknowledge that he could have moved, and attributed the apparition of a spare nose and sundry additional eyes, to the head-rest or the shaking of the floor. I have a skeleton studio in the garden, so our next attempt was made there.

\* Continued from page 87.



The light, however, was not first-class, and I hit the time exactly with a two minutes' exposure, using a number two stop, and removing it during the sitting. But again the double nose appeared. My friend the colonel attributed this untoward event, as the Duke of Wellington styled our victory at Navarino, to the shaking of the table or the rotation of the earth, I forget exactly which; one thing, however, I remember perfectly: it was *not* to his having moved. No doubt the length of the exposure was partly due to the advanced season of the year, for by the time that all things were in order, and I had got through the preliminary stages of my troubles we had come to the commencement of October. Following the directions of Dallmeyer, when I brought the lens so near to the figure, I diffused the focus of the lens by giving nearly four revolutions of the screw. This, of course, takes off considerably from the sharpness of the head, but is necessary, in order to get something like evenness in the definition. I think the best effect is obtained by a combination of this diffused focus with the use of a small stop. Of course, this must add very materially to the already very long exposure.

At the risk of being tedious, I have entered into these details respecting the large D lenses, as I do not find their management is generally understood. Mr. Blanchard, who uses a lens of this construction, once observed to me that they require an apprenticeship to use them properly. A letter from Mr. Samuel Fry has lately appeared in one of the journals, stating that by the improved construction of his studio he had been enabled to reduce the time of exposure required by a 7 D most materially. As his experience differs very much from mine, I shall, if possible, avail myself of his kind invitation to witness these results. Mr. Fry makes one very valuable suggestion: he proposes that the side light of the studio should be made to slide along, so that the light may be admitted without any obstacle. For some time I have been contemplating such an alteration with regard to the top light. Why should we not apply the principle to both? In the summer season it would not only shorten the sitting, but add materially to the comfort of the sitter.

And now, gentlemen, I approach the end of these troubles. The obstacle with regard to the more than life-size heads prevented me from competing in that class, and I contented myself by sending three of the smaller size on 15 by 12 plates. As I never expected that one who has had so little practical experience of this kind could successfully contend against the giants of our art, I experienced no disappointment at my want of success. I rather console myself with the reflection of the old Greek poet. "In great attempts 'tis glorious e'en to fail," and rejoice that the art I love has better followers than myself.

If I may be allowed to sum up the results of these random observations, I must admit that for extreme sizes the enlarging processes are easier, cheaper, and may be used in many cases where the large lens cannot. As far as they will properly go, however, I believe in the direct pictures. They have more force, depth, and brilliancy; more detail, and, I believe, more refinement. If we refer to the acknowledged leaders of our art science, we shall find their success is owing to their larger and bolder work; none of them owe their reputation to any enlarging process. The aspiring photographer will not be contented with a dull mediocrity. He will strive not merely to equal the works of his competitors, but will endeavour by all possible means to extend the bounds of the art he follows. Can such a man be content to stop at carte negatives? I boldly answer, No.

#### PHOTOGRAPHING THE TRANSIT OF VENUS.

Mr. J. AITKEN gives in *Nature* the following hints on what is known as "blurring," but which he styles "irradiation."

"The following is the result of some experiments recently made on photographic irradiation:—

"If, as is generally supposed, photographic irradiation is caused by the reflection of light from the back surface of the plate, then photographs taken on non-actinic coloured glass ought to be free from irradiation, because the light would be quenched in the glass, and therefore no reflection could take place. Photographs of a model transit were taken on yellow, orange, and red glasses; but in all cases the irradiation was nearly as bad on the coloured glasses as on the clear glass.

"Photographic irradiation may possibly be caused, either by the bright light producing an intense state of chemical activity, which has the power of spreading itself, or, what seems more probable, the parts of the collodion on which the bright light is falling become luminous, and reflect light to the surrounding parts of the sensitive film, and thus extend the chemical change in each side of the true optical boundary line. If this is the explanation, then we can correct photographic irradiation by allowing only sufficient light to fall on the plate to produce the necessary chemical change, so that there shall be no surplus to be reflected: or we may make the sensitive film of such a nature that it cannot reflect the actinic ray. There are two ways of carrying out the first of these plans. We may either 'stop' down the lens by means of a diaphragm, or we may pass the light through a non-actinic coloured screen. The first should be the best plan, but was not found practicable with the Dallmeyer 'triplet' lens used in the experiments. Screens of glass and coloured solutions were then tried, and photographs of the model transit taken perfectly free from irradiation, and not to be distinguished from photographs of the model taken against a dull sky, which required fifteen seconds' exposure. Experiments were then made to make the sensitive film incapable of reflecting actinic rays. This was done by adding red aniline to the collodion, till the colour was found by experiment to be deep enough. Photographs taken in this way were also quite free from irradiation. After the photographs were developed and fixed in the usual way, they were treated with chlorine gas, which destroyed the red colour, and left the photographs on a clear film.

"Ocular irradiation is also, in all probability, in part caused by the reflection of light in the eye. But in addition to this cause there is another of considerable importance—namely, the 'persistence' of the image combined with the unconscious motion of the eye, as the impression received by the brain is not only that of the light on the part of the retina where the image at the time is, but also that of where it was a short time before; the mental impression must, therefore, be larger than the image on the retina. Ocular irradiation can also, in all probability, be corrected by reducing the amount of light falling on the eye to the minimum necessary to give a distinct impression. The reflection in the eye will then be less, the image not being so bright will not 'persist' so long, and the light not being so brilliant the stimulus to the unconscious motion of the eye will not be so great. Diaphragms will, of course, be preferred for this purpose. When screens are used it is probable that neutral-tinted ones will be found to suit best."

#### CHLORIDE OF SILVER AND CONCENTRATED SULPHURIC ACID.

—The *Chemical News*, quoting from the *Zeitschrift für Chemie* speaking of some experiments by A. Sauer, says:—"It is commonly stated that chlorido of silver is not attacked at all, or but very slightly, by concentrated sulphuric acid. This is incorrect. If chlorido of silver, either recently precipitated and washed, or crystallized, or fused, is heated for some time with concentrated sulphuric acid in a covered porcelain capsule, the chlorido of silver is decomposed and dissolved, with escape of hydrochloric acid. Chloride of silver is also soluble in solutions of perchloride of iron, a circumstance which should not be lost sight of in determinations of silver."



# The Photographic News.

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## RESTORING THE SENSITIVENESS OF BROMIDE OF SILVER.

ONE of the special advantages which in the old times the Daguerreotypist possessed over the modern photographic portraitist consisted in the fact that a Daguerreotype plate which had been exposed to the action of light could be re-sensitized. A few moments' exposure to the fumes of iodine removes any image impressed by the action of light, and restores the normal sensitiveness of the plate. In any case where a sitter has moved, and so spoiled the portrait beyond redemption, or in a case where the plate has been accidentally exposed to light, the remedy was simple and the plate was not wasted. The collodion worker possesses no such remedy in case of a plate spoiled in exposure.

The action of light, if it fail to produce a satisfactory negative, spoils the plate beyond remedy. Hence the anxiety of the portraitist when called upon to take trouble, some babies, and the waste of time and plates produced by restless sitters. Cleaning the plate, coating the plate, and exciting the plate, involving waste of time; the expenditure of collodion and nitrate of silver involving waste of material, all become useless if a finger be moved by the sitter. No treatment with iodine will effect a remedy. Immersion in a solution of an iodide will remove the image; but it will also destroy the sensitiveness of the plate.

There is reason to believe that the characteristic possessed by the Daguerreotype plate also distinguishes at least some bromide emulsion plates. After exposure to light they may be re-sensitized. Mr. Kennett, to whose gelatino-bromide emulsion we recently referred, describes a very interesting experiment in connection with this subject. One of the bromide plates which had been exposed freely to diffused light was immersed to the extent of one-half in a solution of bromide of potassium, and then the whole exposed under a negative and developed. The half which had not been immersed was, of course, one mass of fog, and no trace of an image. The half which had been subjected to the solution of bromide gave a perfect, vigorous image. This fact, if verified in further experiments, points to some interesting and important possibilities. Not only may a plate spoiled in exposure in the camera be re-sensitized and again used, and plates which have received accidental exposure to light in travelling be also restored in a similar manner, but the sensitive dry gelatine sold for preparing emulsions acquires an immunity from risk of a most valuable character. One of the difficulties attending the vending and use of such dry sensitive gelatine would be the constant danger

of an occasional accidental exposure to light. But with this facility of re-sensitizing, no trouble need arise from such exposure, as a few moments' treatment with a bromide solution would destroy the effect of light, and restore the normal sensitiveness. How far the same fact may be found true of all bromide emulsion plates it is impossible at present to say. In those in which free nitrate forms an essential element it is manifest that a difficulty would arise. At any rate, the question is an interesting one, and the possibility involved may give a new element of value to all bromide emulsion processes.

## THE RIGHT TO ONE'S FACE.

It is a common complaint amongst professional photographers in this country, that the social status of the photographer, as a photographer, is of a less assured character than it ought to be; and there is, unquestionably, some ground for the complaint. Amongst the many causes which have some influence in affecting this social status, the ready tendency of some writers in the public press to assume the worst, and then proceed to argue upon such assumption as fact, is one of the most important factors. In the correspondence which we printed last week on the subject of copyright in portraiture, this tendency was shown, and it is fully maintained in an article on the same subject which appeared in the *Standard* a few days ago. It is assumed that a practice commonly exists amongst photographers of exhibiting or publishing the portraits of their sitters without their leave and against their protest. "People complain," it is said, "that they find themselves staring at unauthorized portraits of themselves in shop-windows, and often not in the best company." As a general statement, nothing could be more untrue. No respectable photographer publishes unauthorized portraits. Indeed, if any man were foolish enough to do so, he would find that it did not pay, as he would ruin his reputation and connection at once. Such a thing may occasionally have been done by some thoughtless or unscrupulous photographer, but the rule amongst portraitists is not to part with a single copy of a private portrait without the authority of the sitter. The supposition, indeed, that private portraits would be of any value for publication, and that they are likely to be paraded in "the sight of all Cheapside, the Strand, and Fleet Street," as the writer in question suggests, is absurd enough. But as for portraits of public characters, which may be seen in these and other thoroughfares, this writer should know that they are taken expressly for publication, with a perfect understanding as to the purpose; and that "Lottie Peachblossom," or "The Great Bounce," agree to such publication, because it helps to popularise them, and the time may come when that popularity may enable them to exact a royalty from the photographer on the sale of the portraits which at one time they would willingly have given a premium to promote. Here is the article from the *Standard*:—

It is asserted as a grievance that a man has no right to keep his own face to himself and his friends—in other words, that he has not a copyright in his countenance. People complain that they find themselves staring at unauthorized portraits of themselves in shop-windows, and often not in the best of company. Nor is the complaint altogether unjustified. The facilities of photography are certainly abused by many of its inferior professors, although the art itself is growing into greater value daily. There are some who affirm that it has exercised an injurious influence, by superseding in a large degree original drawing, steel engraving, lithography, and sketching from nature; but there appears no serious evidence of this, while, on the other hand, we have had almost the whole architecture of the world which was worth copying brought home to us by the process, as well as the pictures, the statues, and the antiques in every gallery. At the same time, a race exists of photographers only half-trained to their work, who misuse the light of heaven by the multiplication of blots on card-paper supposed to be portraits; and hence a general nuisance in the shape of albums, presenting every possible variety and distortion of feature, the pages of which politeness compels the weak-minded to turn



over, and ugliness, which the same weakmindedness is compelled to praise. But the mischief does not stop at this point. It is bad enough that in nearly every drawing-room a batch of common-place visages is paraded for inspection, from that of some old butler to that of the newest and most beautiful baby in the land; there is the chance of being seized upon, unconsciously, by the photographer, and turned into material for his tout, or for an illustrated newspaper, whether such publicity be agreeable or not, and whether or not the delineation be faithful or a mere slander in light and shade. There are persons not a little sensitive in the matter who object to seeing their lineaments exposed to the common gaze all the season through merely because they happen to take well, and the artist thinks he has not reaped his legitimate profit when he has pocketed the amount of his charge. Naturally, too, there are others who, disgusted with the photographer's failure, throw it aside, and are annoyed to see it disgracing them in the sight of all Cheapside, the Strand, and Fleet Street. The evil is a petty one, no doubt; but as a matter of right, when the photographer has fulfilled his commission, and has been paid for it, is it legitimate for him to make a market of his sitter? Without an express stipulation to the contrary, Mr. Leighton informs us he can legally do so; but, when Parliament has time for these minutiae an Act might remedy the wrong; though, for our own part, we should prefer trusting to the repudiation of the practice by the more respectable masters in this most popular department of art. It might be impossible to restrain the multiplication of faces belonging to public men—statesmen, members of Parliament, distinguished writers, great travellers, philanthropists, and so forth—because they live in the full glow of the sun, and must expect to figure in the galleries of even cheap and bad photography prior to being immortalized by cheap and bad wood-engraving. Nor, in the main, are they averse from this sort of celebrity; and so with actors, actresses, singers, who, however, are careful as a rule to permit no portraits of themselves to be taken unless with a flattering effect; and then the more their identity is blazoned the better are they pleased. But there are thousands imbued with a strong repugnance to a shop-window notoriety, and especially so when they may hit upon their portraits displayed side by side with others of a not too unequivocal character. It is a fact that the photographer, when he happens to have as a sitter any one possessing beauty, and whose portrait makes also a picture, continually converts the negative to his own use, frames a graceful face for his doorway, and thus tempts the vanity of the passers-by. The trick is one thoroughly well-known, and it ought to be scouted by the more reputable class of the profession itself. Not that any actual harm is done, although painful errors might, no doubt, arise; but to have the face of a wife, a sister, or a daughter, hawked about as a specimen of the work turned forth in a particular studio, is, to say the least, far from pleasant, though, as a matter of fact, the photographer has a perfect right to crowd his entire window, if he chooses, with representations of a single countenance, and thus make it the talk of London. It is not so with art-galleries. In most cities of Europe a regular code of restrictions is enforced upon copyists and photographers; while at Dresden and Munich the only complete sets ever taken were for the Kings of Saxony and Bavaria. Socially, however, the custom is becoming intolerable. Any one who has ever been photographed may, for example, should he happen to be a conspicuous witness at a trial, behold a blurred and abominable thing purporting to be a semblance of himself, as an illustration in the pages of an amateur police gazette. Mr. Leighton's story of Madame Rachel, into whose room when she lay dead a photographer obtained admission, producing a ghastly caricature, which he sold as "from the life," is only an exaggeration of the pestilent habit prevalent among ourselves.

The unauthorized exhibition of portraits in a photographer's specimen-case might, it is true, become an occasional annoyance, but few photographers would persist in such exhibition against the expressed wish of a sitter. In any case, the possible grievance is of too insignificant proportions for lengthened discussion in the public press. It is unauthorized publication, if such were common, which could alone justify such public protest. If such a practice existed, the plan recently suggested by Mr. Beau, of giving the sitter the assurance of safety involved in registering the copyright in his name, might be worth adoption. As the matter stands, we can scarcely see that any evil exists in the matter calling for remedy, unless it were possible to check the publication of the mistaken notions of alarmists who remain pertinaciously ignorant of facts.

Mr. Whitfield, of the well-known firm of Lock and Whitfield, writing to the *Standard*, confirms our statement of the practice of respectable portraitists. He says:—

SIR.—In an article on copyright in photography, in your edition of Friday last, you ask, "Is it legitimate for the photographer to make a market of his sitter?" I say certainly not, if his sitter has commissioned him to take a portrait, and pays him for so doing. At least this is the way, I believe, the law, whether rightly or wrongly, has always been viewed by the profession, and I never heard of any photographer having the audacity to publish copies of portraits that have been executed on commission without obtaining the express sanction of the sitter, or, in case of his death, of his family. If this is not really the law, the sooner it is made so the better. Photographers, I consider, not only have no right to publish without permission, but they ought to be very careful how they part with portraits to any one, even to members of the sitter's family, without his written authority. But if the law is uncertain, the best way to prevent an improper use being made of the negative would be for the sitter to purchase it, and keep it in his own possession, employing whom he chooses to print from it.—Your obedient servant. G. C. WHITFIELD.

#### DISRUPTION IN THE PHOTOGRAPHIC SOCIETY.

AMONGST the various comments and suggestions on the present crisis in the society which reach us from various quarters, one or two ideas seem to have acquired general prevalence. A wide spread feeling exists to the effect that there is something supremely absurd, if not absolutely illegal, in the notion that the government and probable future of a society, numbering three or four hundred persons residing in all parts of the United Kingdom, should be destroyed by the combination of a couple of dozen persons. And the outcome of this idea is a prevalent feeling that some early steps should be taken to elicit the views of all the members on the proceedings at the late special meeting and annual meeting. The question is asked, whether, in an emergency like this, a *plebiscitum* should not be taken. The answer is very simple. A general decree of all the members should, undoubtedly, be the final appeal in such case, but how is it to be secured? Those now in power, legally or illegally, are not likely, as a correspondent suggests, to take a course which would probably put a summary end to that power; and there is neither stand-point nor fulcrum for outside action.

We do not at present see light. There are some signs of disorganisation in the new camp. On another page we print a letter from Mr. Thomas, who accepted a position on the committee appointed by the requisitionists, solely with the hope that he might be able, in the emergency, to do some service to the society. With the natural instincts of a high-minded and honourable gentleman, his first aim was to make an appeal to the general mass of the members, which such a crisis demands. Such a course did not accord with the views and purposes of those who have recently attained the reins, and finding his aims for the society hopeless, Mr. Thomas has found it necessary to resign. We have heard of another gentleman, one of the most energetic and capable of the requisitionists, who contemplates the necessity of leaving his party, and placing himself in antagonism to them. What may be the outcome of all this we cannot tell.

In a letter from Mr. Sawyer, another gentleman associated with the party in office, it will be seen that a most important admission is made—an admission which may be satisfactory to those of the council who have advocated the rights of the country members, as it shows that the arguments have not been quite thrown away. The "time has come," it is admitted, for "considering" the "important step of admitting every member of the society to the right of voting and nominating, quite irrespective of their presence or absence at any particular meeting." This is a most important concession. Only a fortnight ago the rule which made personal nomination imperative was insisted upon as the very basis of any modification of the laws. Any committee formed was to be trammelled with this as



an instruction. Personal nomination in open meeting was then a corner-stone of the new structure. Now, thanks to the cogent logic of the speakers and writers on the side of the council, some of the requisitionists are willing to get rid of this corner-stone as soon as they can decently drop it. The subject will be "considered," and if the process of consideration be not too long, there is hope for the society in this.

The notion of a national society seems also to be gaining ground, but the general attitude of all concerned remains one of waiting expectancy.

### THE ACCELERATING EFFECT OF COLOURED LIGHT ON SENSITIVE FILMS.

BY W. T. BOVEY.

THE accelerating effect of diffused light when applied to a sensitive film prior to its being exposed, under ordinary conditions, in the camera, has of late excited considerable attention, and much ingenuity and fertility of resource have been developed by experimentalists, who have investigated this important matter with a view of advancing another step in the direction of instantaneous photography. These—unanimous in their recognition of the principle—differ only in the obstructive medium they select for reducing the intensity of solar light to a requisite degree of dilution. Now, in reference to this interesting question, placed—not for the first time—before the photographic world, it has occurred to me that in this, as in all other branches of scientific research, success in a great measure depends on an acquaintanceship with ruling principles, as, without such knowledge, experimentalists must needs go groping in the dark, trusting to lucky accident or blind chance for a successful issue to their labours. Prompted, therefore, by the consideration indicated, I am tempted to trespass on grounds of theory, that I might extract from speculation some lesson which might prove capable of a practical—perhaps a useful—application; and to realize this object in view, it is necessary, in the first place, that we enter briefly on an enquiry having reference to actinic influence, as evidenced by its effects on a chemically prepared and sensitive medium.

Concerning this matter we already possess certainty, from the teachings of experience, that with the camera pointed skywards, an almost instantaneous exposure suffices to reproduce beautiful cloud forms, perfect in softness and absolutely correct in detail. We also know that if the exposure is prolonged but a few seconds, that the sensitive salts spread evenly over the plate become uniformly excited, and, under such conditions, all trace of form is lost, and an opaque ground springs up under the action of the developer. If the time of exposure is further increased, the magnetic and latent force diminishes conversely with the added length of exposure. Pushed to extremes, the developer ceases to act in the usual way; bare glass is shown as the result of the experiment.

And thus does it arise, as I have some time since pointed out, that lights and shadows of a given object might easily be reversed by prolonged light action on the plate placed in the camera; and from this ascertained fact we learn that the immediate operation of actinism when brought into contact with the sensitive haloid salts of silver, *plus free silver*, is to induce the several stages of decomposition, or, rendered in other words, a partition of the combined elements. As, for example, light, in its first contact with a sensitive film, produces a molecular disturbance which might, perhaps, be likened to the effect noticed when a piece of steel is held near a balanced magnet. There is nothing definite beyond a tremulous motion and a divergence of the needle from its normal position, which returns to its natural position when the cause of disturbance is withdrawn. But, unlike the magnet, the molecular disturbance wrought on a sensitive surface by light produces a permanent change of structure which possesses the peculiar property of attracting to itself the

silver set down by the reducing agency of the developer. But in the event of the light being filtered through coloured glass—which, by the way, is only a convenient method of producing semi-darkness—the disturbing force, whilst sufficient with brief exposure to overcome the vis inertia of the chemical combination connected with the sensitive medium, is not sufficiently strong to carry the decomposing influence to that stage which sets up magnetic attraction, which is capable of acting in concert with the developer. Subsequently, on receiving exposure in the usual way, the requisite conditions are produced with a saving of time that must, under other conditions, have been consumed in overcoming the inertia before referred to.

Hence, then, we learn that any advantage derived from what I might term initiatory exposure must entirely depend on that exposure being so nicely adjusted as to be stopped immediately within the threshold of that stage when magnetic action is set up, otherwise fog is inevitable, and ruin to the negative must be anything but doubtful.

I am strongly inclined to believe that, in order to make this new aid to sensitizing a practicable help, a steady, uniform, and at all times reliable description of light is necessary. Such, I scarce need observe, is not to be procured, in our changeable atmosphere, from the solar luminary. It would therefore be advisable to have recourse to some kind of artificial lighting, such as gas, paraffin, &c.; these, varying but slightly in actinic intensity, would enable the operator—having first proved by experiment the limit of exposure that is free of danger in the direction of fog—to time his primary exposure within such limits; and thus may he secure all the available advantages possessed by the new power placed in his hands.

The principle embodied in this novel method of accelerating exposures is one that I have often found useful to me in my printing operations, more particularly in the work of printing in natural colours. As, for example, I desire for a landscape a horizon bright and sunlit, with fleecy clouds traced in distance. Well, I have only to arrange the mask in such a way that feeble light is diffused, and gets admittance beneath the arched covering. Too weak to include visible printing, yet sufficiently strong to create latent forms, the effect is not seen until the print is removed from the frame, when a few seconds' exposure to diffused light brings out the before unseen clouds, and the result sought for is thus easily procured.

Whilst these last remarks impart a lesson worth learning, they also point out the necessity of avoiding semi-transparent spots, that are sometimes the result of imperfect painting out of skies. On removal from the frames the sky parts appear white and faultless; but on tinting down those whites, out jump dark spots. "Oh, that abominable paper!" (the ordinary seapegoat for all photographic disasters). Forgive the paper for this once, dear reader, as a little agitation over the irregularly produced spots I have alluded to will impart a deal of information to your understanding respecting the principles embodied in the mode of accelerating exposures, to which, in this chapter, I have endeavoured to enlist your careful and heartiest attention.

### Correspondence.

#### DISRUPTION IN THE PHOTOGRAPHIC SOCIETY.

SIR,—It is with some regret that I find myself, in starting, at issue with the members of the committee who have been elected by the Photographic Society with the new council to revise the rules for its conduct. I feel strongly that, under the circumstances which have brought about an event without precedent—viz., the resignation of all the officers of the society—it would be most desirable and politic, before presenting new rules at the next meeting, to test the feelings of both the metropolitan and country members, by circular, as to their views regarding the one point about which the retired officers and the requisitionists are at variance, and then to act on the result so obtained.



As this suggestion has not at present met with a favourable response, I am obliged, as one of those who voted with the council, to withdraw from the committee at this stage of its proceedings.—I am, sir, yours very obediently, RICHD. W. THOMAS.

#### DISRUPTION IN THE PHOTOGRAPHIC SOCIETY.

SIR,—As one of the numerous country members of the London Photographic Society, who are totally ignored by the party who have deposed the president and council, I should like to say a few words.

First, I wish to know why I received no ballot paper, as post-cards were sent stating that ballot papers would be sent to all *bona fide* members who had paid their subscriptions? I am a member of the Junior United Service Club, London, containing two thousand members; and on important occasions like those affecting all the members, ballot papers are sent to all the country members. If the country members are to be ignored, as they have been, in the London Photographic Society, I, for one, shall not long remain a member, and many others will, no doubt, agree with me.

As regards the action of the requisitionists, who have turned out the president and council, I consider (as a member) their conduct factious and discreditable, after having carefully perused all the correspondence in your columns, including the letters of Mr. Hughes and Mr. Stillman.

As a member who has been ignored, I, for one, shall ignore the acts of the so-called new vice-president and council, and I consider that they should be got rid of by a vote of *all* the members, in order to clear the ground for reasonable amendment in the laws of the society. If this is not done, the society will become a mere local clique. The requisitionists may be likened to Korah, Dathan, and Abiram, who "took too much upon them." Our rebellious spirits have taken far too much upon them to presume to act for the whole society.

I think it would be well if some course were indicated, Mr. Editor, through your valuable columns, to all country members of the London Society, how to act in concert in order to depose this self-elected council.

Colonel Wortley's suggestion for a national society deserves the consideration of all amateur and professional photographers really interested in the advancement of the photographic art.—I remain, your obedient servant, FRANCIS W. TURTON,  
Bedford, February 23rd. Commander, R.N.

SIR,—I presume that all well-wishers to photography, whether they reside in London or the country; whether they are engaged in any form of photographic business enterprise, or are simply interested in the beautiful art as amateurs, must cordially agree with a correspondent in your last, in hoping that some method may be found of inducing the council to resume their duties for the present year, and, when a perfectly revised code of rules is provided, gracefully place their offices at the disposal of the members. The result of a universal vote of the society would beyond a doubt place the majority of the council again in the position which they have, for photography, so beneficially filled. But I fear that this very fact is the greatest obstacle. The retrogressionists—I use the word advisedly—now in power probably know as well as any one that their power would be destroyed by any universal vote, and are not likely to seek such a general expression of opinion and direction. The society has nothing, I fear, to hope from any graceful steps on their part towards the late council; and, I fear, equally little to hope from any energetic independent members, most of whom seem too much disgusted with the success of a petty conspiracy to take steps of any kind.

The one thing which now seems to be desirable is to obtain a *plebiscite*. But how? The new rules of the requisitionists not only make no provision for the vote of country members in electing officers, but they expressly stipulate, on the contrary, that no one shall ever propose or nominate an officer unless he attend the January meeting for that purpose; and he must again attend the February meeting to vote. Until, like the fabled monster which swallowed its own offspring, the requisitionists destroy their new made rules, the society can have no hope from the aid of country members. Can you suggest any way out of the difficulty?

There are one or two more questions I wish to ask. The new officers being said to be illegally elected, can they spend the funds of the society? Is the balance of £300, referred to, safe? If a national society be formed, can the general voice of the present society hand over the funds to the new society?

STUM CUIQUE.

SIR,—It is a misfortune that the crisis through which the Photographic Society of London is passing should have been productive of so much embittered feeling, and given occasion for such a leading article as appears in your journal of the 13th. You have an undoubted right to your opinions, and also to the advantage in their expression which your position as a journalist affords. I therefore ask to be heard in defence of what I believe the only course by which energy and vitality can be infused into a society which, from its position, should have been the head and leader in matters photographic, not only in London, but in all places where photography is cultivated by Englishmen.

(1) In my estimation, the principal causes that have led to this disruption may be summarized as follows: the government of the society has become practically an oligarchy; the council seems to have considered itself a something quite separate and apart from the members generally, its president elected in perpetuity, its members discussing amongst themselves who shall retire and in what order, giving rise to much unseemly bickering, and tending to keep the power in the hands of a few individuals, and which, in the end, tends to formulate a sort of despotic authority which is no longer endurable.

(2) By what right does a council (as a council) take it upon itself to nominate, in a general meeting of the members, certain persons to serve on a committee? By what right does a council seek to interpose between a body of members, who sign a requisition, and the meeting they seek to address? By what right, or upon what principle, does a council offering honours to those who distinguish themselves in the art, constitute themselves judges as well as donors, instead of appealing to a jury of independent persons?

(3) There can be no doubt but that, right or wrong, an immense feeling of dissatisfaction has arisen. It was high time that matters were brought to a crisis, and whether the mode of doing so has been the one best calculated to effect the purpose can only be proved by the results of such action. To dwell upon the past is futile. The enchainment of events has placed power in the hands of the opposition; they will, I trust, use it wisely in placing the constitution of the society on a much wider basis; in providing for a constant circulation between council and members; in so arranging, that each year the council shall see a change in its constitution, by the introduction of new energy and fresh ideas in the persons of those members who, being modest and unobtrusive, have not sought for or obtained a position in which their talents and industry could be of service.

(4) The subject of admitting country members has been abundantly discussed by the advocates of the new constitution. It was felt that it must be postponed until the important question which concerned the metropolitan members only was disposed of; this now being the case, the time has come for the consideration of the important step of admitting every member of the society to the right of voting and nominating, quite irrespective of his presence or absence at any particular meeting; and upon this subject there will be little or no difference of opinion.

(5) I firmly believe that the sole motive of those who desire a reform in the society has been to promote its welfare, by raising it to its true position; by helping it to a journal very different to the one which is now presented monthly to its members; by attaching to it "corresponding members," not in England only, but on the Continent and wherever there is anything to be learnt; by enabling it to obtain its information first hand; by enlisting in its favour the sympathies of all who conscientiously practise the honourable occupation of photography; by eliminating from its government all suspicion of favouritism and jealousy; and finally, of enabling the society to take rank as the real centre to which all that is worth knowing or practising in the art of photography shall naturally gravitate.

J. R. SAWYER.

[Our correspondent's letter arrived too late for insertion last week. It requires one or two brief notes of comment. As coming from one of the really single-minded and conscientious amongst the requisitionists, it fairly represents the singularly incomplete and mistaken view which honest men can take of very simple and plain facts. Our correspondent is a gentleman who, having joined the society when it has been nearly twenty years in existence, speaks of its having "become" practically an oligarchy, &c. Whatever it is, it was when he joined it. The council *seems*, he says, to have considered itself something quite apart from the members. We, from long personal familiarity of the society and the council, *know* that they considered nothing of the kind. Of course they discussed amongst themselves who ought to retire: that is part of their business, as it is of every council and



board in the kingdom, as no one can know so well as they who is efficient, and who is inefficient; who attends to duty, and who does not. The "bickerings" to which our correspondent refers are in his imagination. We never saw anything approaching to a bickering on the council. They had no power to keep the authority in their own hands, as the society had the power to elect seven new officers every year. The fact that they always accepted the nomination list of the council simply showed that the society at large had full confidence in the council.

The council has assumed no "rights" different from those of the members generally. It has simply had very specific duties; and amongst these was the conservation of the constitution of the society, which was committed to its charge, from wanton, crude tinkering. Where reform was desirable, they knew it could be better and more wisely managed under the advice of some whose experience in the history, vicissitudes, and general working of the society gave their hints value, than under the sole guidance of a committee consisting of persons new to the society, unfamiliar with its history, and ignorant of the special vicissitudes through which the society has passed. And hence they felt it important to suggest that three of the revising committee should be left to their nomination. The crude and narrow rules proposed by the requisitionists certainly gave no indication of a degree of wisdom from which much could be hoped in dealing with other rules. In any case, if "rights" were in question, theirs, as duly elected by the members to official duty, was surely transcendently greater than that of a self-elected junta who did nominate *all* the committee. The council did not interpose between a body of members signing a requisition and the meeting it sought; but when that body sent in an illegal requisition, the council sent a courteous and conciliatory message, offering to facilitate their views without the necessary delay of getting up another requisition in legal form. And when the requisitionists (or a few of them) sent an insulting letter (which they garble in giving to the public eye) and another requisition, the council called a meeting, even although the requisition contained the names of many disqualified from legal action by being in long arrears of subscription, and one name of a person who had never been a member of the society. The council, being the elected representatives of the society, in distributing honours, appoint the gentlemen to judge whom they conceive most capable of forming a correct judgment. They were elected by the society to arrange all such matters. On what principle can members of the council be supposed to be less independent in distributing honours than non-official members?

The utter groundlessness of the statement that a widespread feeling of dissatisfaction prevails is shown in the fact that with all the canvassing and organization used by the requisitionists, but twenty-eight votes were secured, and these, some of them, since regretted. The result, of course, remains to be seen; but it is not hopeful at present.

If any idea of admitting country members to voting powers was originally entertained by the requisitionists, it is clear that they rejected it, as their rules exclude it. It is quite probable that since the question has been so cogently put by the council, and those who agree with the council, that it has been dismissed; and it is more than probable that, thanks to the arguments of the council and the loyal members, such a course will now be forced upon the requisitionists. But in doing this, one of the first things they will be compelled to do will be to rescind or alter the rule which they made such an effort to carry, in which there is not only no provision for country members, but an absolute prohibition to even nominating members of council unless they attend in person to do so, whilst the old rule of the society permitted written nominations without personal attendance. The present meagre character of the society's Journal is due solely to the influence of those members of the council who are now with the opposition. These gentlemen have, out of an honest regard for economy, proposed the abandonment of the Journal, and, failing that, reducing its cost as much as possible. When the new *regime* has acquired a little knowledge of the business of the society, they will better understand the aims and action of the late council. The removal of suspicion of favouritism and jealousy will be a worthy ambition; but, as the new *regime* is initiated under the especial influence of these feelings, a serious purgation must arise before the desired millennium of the society is attained.—Ed.]

#### THE FRENCH EXHIBITION.

SIR,—I have received from the French Photographic Society a circular note requesting me to contribute to their next exhibition. But the request is couched in terms that place the entire

business upon the level of a shopkeepers' speculation. I am to pay for the space occupied, and pay rather dear, too. How strangely this contrasts with the liberal spirit in which our Photographic Society of London gets up—or perhaps I ought to say used to get up—its exhibitions. We have never demanded payment for the space occupied by our own photographers, and have ever been ready to welcome with outstretched arms the contributions from abroad; and, instead of making our distinguished neighbours pay, we have in spirit, if not in practice, been more ready to pay them. At least, I believe that cases of pictures sent to our exhibitions by foreign exhibitors have always been returned carriage paid, and this courtesy was shown at a time when the society was by no means too flush of cash. I can scarcely imagine a more subtle insult to offer a man like Adam Salomon or Fritz Luckhardt than to tell him he must pay to be allowed to exhibit his pictures in London at the Photographic Society. To do so would be to suggest that the pictures were not good enough to show on their own merits, but must needs be paid for: as if to be allowed to send one's work to an exhibition were such an honour as to be worth paying for; whereas, in fact, the burthen is just on the other shoulder, and it is the photographer who does honour to the society by allowing them to exhibit his work for the instruction of others.

I hope English photographers will consider this matter before they send their pictures abroad, and see if they think, in the vulgar phrase, "the game is worth the candle." I for one do not think it is, and I will have no more of these shabby exhibitions.

I have sent twice to exhibitions of photographs at Paris. On the first occasion my pictures were besieged in the Palais de l'Industrie, and were, I believe, reduced to a fine powder by the German shells. This, perhaps, was no fault of the French Society, but then they might have had the courtesy to write and say that the boys next door had been throwing stones and had broken our pictures, and that they were duly sorry, and so on.

On the occasion of the last exhibition I paid the demand made upon me for space, and at the close of the exhibition I received a note (scarcely polite) that the pictures must be removed on such a day at my own risk and expense, an agent whom I appointed to do this for me not having attended to the business as he should have done. I received in a few days more a peremptory letter stating that if my pictures were not removed at once, they would be sold—to pay expenses!

For the present, the interest which is felt in France in the productions of English photographers may, so far as I am concerned, rest unsatisfied, as I will not exhibit again to any society whose treatment of their friends varies so very much from the polite.—Yours truly,

AN ENGLISH PHOTOGRAPHER.

#### GELATINO-BROMIDE PROCESS.

DEAR SIR,—As the gelatino-bromide process is now occupying so much of the attention of photographers generally, I must beg a small space in which to say a few words on the subject of some comments made by Mr. Sutton on the process, and which appeared in another journal. My attention has been called to the matter several times, and the question asked, has this process really the drawbacks attached to it, as represented by Mr. Sutton? As the same question may arise in the minds of many, and as I believe there are very few who, from actual experience, can answer them satisfactorily, I will, with your kind permission, give my own experience.

I have now, coated, exposed, and developed, some hundreds of them, and the very faults Mr. Sutton places to their account are the very ones, of all dry plates, they are least subject to. In the matter of the fly and dust traps, as he calls the plates whilst drying, they are just subject to the same risks as all other dry plates. As there are now thousands of these prepared without spot or blemish, that may pass for what it is worth.

He then goes on to say, as gelatine is more soluble than collodion, it will not stand the washings of water and hypo. If he saw how I treat them, I think he would have left that unwritten. I have had them in water for hours between the exposure and development, and not a whit the worse for their long immersion.

Now for the blistering, to which he says they have such a strong tendency, and of which I have the greatest horror. I am pleased to say in my hands they are perfectly free; they are, I think, of all dry plates, the most free from that particular defect. They will, however, soon be put to the test, and by this time next week I have no doubt there will have been some hundreds put through the ordeal, as I am receiving orders by nearly every post in anticipation of issue, some asking if I cannot oblige by letting them, as a favour, have the pellicle earlier than the time named,



while from the great delay there has been in getting my plant for the manufacture of it in working order, I am afraid I shall not get any out before the time named.—Your very obedient servant,  
R. KENNETT.

#### CHEMICALS AND MANIPULATIONS.

SIR,—I see in No. 803, January 23rd, 1874, Mr. W. T. Wilkinson lamenting "the want of sensitive chemicals and permanent prints." I have been using the acetate of lead formula recommended by Mr. H. J. Newton in the *PHOTOGRAPHIC NEWS*, vol. xv., page 382, giving four changes before and four after the lead solution, exclusively for the last twelve months, and some prints have been exposed to the atmosphere during that time, and I have not seen any visible change in them. I think a print more stable washed that way than one that has had eight or ten hours' washing in the regular way, to say nothing about the convenience of it, for you can print, tone, and mount the same day with it.—I am, sir, yours truly,  
E. TREMBATH.

### Proceedings of Societies.

#### MANCHESTER PHOTOGRAPHIC SOCIETY.

THIS Society met on Thursday, the 12th inst., Alfred Brothers, Esq., V.P., F.R.A.S., in the chair.

The minutes of the last meeting were read and confirmed.

The Chairman read the following letter from the Rev. Canon Beechey, M.A., V.P.:—

"MY DEAR MR. ADIN,—I am delighted to be among you once more in any capacity, even though I now appear as a 'caution.' But only think that, after more than thirty years of oxyhydrogen experience, I have had an explosion (the first I have ever known), which might have been a great deal more calamitous than it was."

"I think it may be interesting to our members, and perhaps even salutary to the public, to know how this happened, inasmuch as it resulted from no carelessness, nor any previously-experienced cause, so far as I know."

"Just before leaving Worsley for Hilgay I bought a new bag from Messrs. Macintosh, which they made on purpose for me, and a real beauty I thought it. I kept it rigidly for oxygen, and luckily for me it proved that it was not full of hydrogen, or I cannot tell the consequences! As soon as I got here I had a new pair of jets from Knott, of Liverpool, and beauties they also appeared."

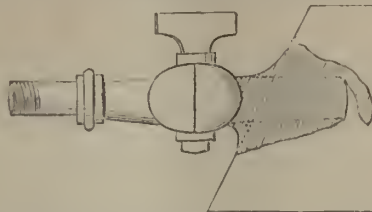
"I only gave two lectures last winter, and on both occasions I found a difficulty in getting sufficient oxygen for more than a comparatively small jet of hydrogen. However, the light was sufficient for my school-room, so I did not investigate the cause."

"This winter, I was about to lecture more. My first lecture was like the former; but having no longer a son to manage my lanterns, I was endeavouring to teach my intelligent gardener, and was determined to get a good light, so we rehearsed in my study! First trial, light as usual! 'What is the reason we cannot get oxygen enough?' I took the jet to pieces; it was quite clear. I blew through the tubes: they were perfectly free. I examined the taps, and took out the plugs; there was no impediment anywhere. It could not be in the bag, for the gas went *into* it quite freely. Well, let us put on more pressure. We had only fifty-six pounds on each bag (as it was for my study, and of course for a small picture), so we put one hundredweight on the oxygen. Then I cautiously thought it was not safe to have *unequal pressure*, even though it was only the supply of oxygen which was deficient. So we added another fifty-six pounds to the hydrogen also, and regulated the supply by the taps. To my surprise and annoyance, whilst the flow of hydrogen was greatly increased, that of the oxygen appeared even less than before."

"My man was trying to get the light. He had turned on only a very moderate jet of hydrogen to begin with, but could not get oxygen enough to ignite the lime with it! He turned on the oxygen tap quite full. The supply appeared to grow less, and soon ceased entirely! In another moment a loud explosion took place, and my oxygen bag burst into a tremendous flame four feet long and from eight to ten inches wide, which would soon have set my room on fire had I not jumped on to the pressure-board, and so squeezed the bag tight at the point of ignition! Fancy how grandly india-rubber would burn in oxygen gas! No sooner was all out, and all safe (for which, I assure you, I felt very grateful) I took up my poor new bag. It had burst, and had burned at the thin edge from the tap about a foot along to the right."

"On opening the slit the cause of the explosion was at once apparent. By some unaccountable accident in the manufacture the india-rubber, which appears to be put in large quantity round

the inner end of the tap, had been squeezed out from its bandages and literally formed a valve thus, over the aperture within the bag.



You see that this would allow the gas to enter freely, but that it closed as it came out, and the more the pressure the tighter it closed. It was not, therefore, difficult to see exactly what had happened. The pressure in the tube was very small—enough to let the oxygen come in, but so that the greater pressure of the hydrogen forced it in also to mingle with it, and no sooner were the two mingled in right proportion than of course explosion took place.

"Now this explosion was evidently only throughout the length of the india-rubber pipe. This was of large bore and very strong. It fired, and therefore a tolerable charge right into the bag blew in the valve, and by its tremendous flame first burst the bag, and then ignited at the opening, allowing the oxygen to escape through the rupture all the time it was burning. Had it been the hydrogen bag, of course all the ten cubic feet therein would have ignited, and the explosion would have been much more serious; as it was, it blew off the weights by the expansion, and the flame was really something to look at."

"Moral: whenever you find any impediment to the flow of either gas, never go on trying to get a light from them, but turn off your taps at once, disconnect your tubes from the jets, and be sure to get a perfectly free flow of the single gas before you connect again!—Your faithful and loving V.P.,  
"Hilgay Rectory, Downham, Norfolk." ST. VINCENT BEECHEY.

MR. JOHN BRIER, Jun., read a paper on "The Production of Enlarged Landscape Negatives" (see page 98), and exhibited several prints and negatives in illustration of his remarks.

MR. FRANKLAND exhibited a number of cameras and other studio apparatus. He said he had a large experience in taking photographs of babies. Sometimes he found great pleasure in taking them; at other times they were a great nuisance. He sometimes thought mothers had conspired against him, and brought all their babies at once. Babies, however, must be taken, there was no mistake about that. It was best, therefore, to lay one's self out for that class of work; for, if they were well taken, the result was more business from older subjects. The baby shutter was of very great value to him; it enabled him to engage the attention of the child with a toy or other object in one hand, while the other was free to work the shutter. He obtained the idea of the shutter from Mr. Blanchard. He (Mr. Frankland) exhibited two of the shutters—one vertical, the other horizontal; also a camera adapted for taking one, two, or four negatives, and a touching desk with light, shade, and hand-magnifier.

MR. HAYWOOD said the present was one of the most interesting meetings it had been his good fortune to attend. He complimented Mr. Brier on the reading of his first paper before that or any society, and said it did him very considerable credit. He pointed to Mr. Brier as a good example for many members who took no active part at the meetings to copy. He also complimented Mr. Frankland on his most interesting display of apparatus. A written description, with drawings, was much less instructive than an actual inspection of such articles as Mr. Frankland had kindly brought a distance of twenty-seven miles to show to the meeting, and he was quite sure the meeting would fully appreciate the efforts of Messrs. Brier and Frankland.

MR. NOTON exhibited a new form of lantern for the lime light. He said he had taken a hint from the sciopticon, as the form of the lantern would at once show. The body was made out of an Australian beef can, the front part carrying the lens out of a small ditto, and the chimney out of a preserved milk tin. The lantern, unlike the sciopticon, was, he said, a breech-loader, for the condensers were inserted from the back.

MR. NOTON'S lantern had a most compact appearance, and served to show how articles that many persons would consider worthless could be transformed into good-looking and efficient apparatus.

The meeting, which was largely attended, was then adjourned.

## Talk in the Studio.

**HONORARY MEMBERSHIPS.**—The Vienna Photographic Society have (in approbation of his photographic improvement and his most excellent and artistic performances) made Mr H. P. Robinson an honorary member. M. Angerer (Austria), M. Davanne (France), and Dr. Vogel (Prussia) were made honorary members at the same time.

**MATT VARNISH.**—We have received from Mr. Barratt, of Torquay, an example of a matt varnish which he has recently perfected. So far as we have been able to test it, the result is excellent. It gives a very finely grained surface, presenting a tooth, without making the negative or transparency to which it is applied in any degree opaque, whilst it takes lead-pencil touching very kindly, and permits the finest possible form of working. It seems to give an exceedingly hard protective surface. We think it will just meet the wants of many photographers.

**PROPOSED TAX ON PHOTOGRAPHS.**—The *Daily News*, giving a burlesque account of reasons which induced Mr. Gladstone to dissolve Parliament, states it as the result of a thorough disagreement as to the mode of disposing of the surplus, and a still greater disagreement as to the new taxes to be imposed in case of giving up the income tax, no less than two members having agreed to impose a tax on photographs. Here is an extract from the startling account:—"Lord Granville, holding in his hand a petition from 75,000 authors, artists, students, and invalids, proposed to place a prohibitive tax on barrel-organs; but Mr. Lowe strongly objected to any interference with these instruments; remarked that but for the charms of music, which were of proverbial efficacy, he could never get into the proper mood in which to receive deputations; and added that his friend Mr. Ayrton, if he had had a voice in the Cabinet, would have said the same thing. Mr. Forster's proposal to lay a tax on novels written by ladies (excepting those of George Eliot) and on imported French dramas met with no better fate; for Mr. Gladstone bluntly declined to make his Budget an instrument of moral culture, and spoke with some bitterness about the results of Lord Aberdare's shutting up of the public-houses. Two of the Ministers had, however, so far agreed as to recommend a tax on photographs, as an article which was at once cheap, a luxury, and of universal consumption; but those members of the Cabinet who had not been introduced into burlesque groups and put in the booksellers' windows consider that the poor photographer should not be harassed. A great number of proposals of this sort were brought forward only to be negated, until the discussion got very warm indeed, Mr. Gladstone observing that the preparation of the Budget was his own business, and that he would not be interfered with."

## To Correspondents.

**ALEX. HENDERSON.**—Various plans are adopted by different photo-collotype printers. The plan adopted by Albert is to use a plate of thick glass—which may be plain or ground—for the basis of the gelatine printing surface, the sensitive gelatine being exposed at the back first, to harden it and give firmness to its hold on the glass. 2. Various kinds of inking rollers have been tried. Those of leather, like lithographic rollers, are, we believe, found best. The composition of glue and treacle does not answer well. 3. The preparation of the ink for different subjects is a point requiring much experience for success. Varnish, and sometimes a little turpentine, are used, we believe. 4. The ink is similar to lithographic ink, and is generally purchased ready for use of the manufacturers. Various makers have, probably, different recipes. **DEPTFORD.**—Distemper colouring is not suitable for photographs, as, being quite opaque, it covers up the photograph, and the finished picture depends entirely on the skill of the artist for any likeness it may retain. Distemper painting consists in using body colour; that is, colour mixed with opaque white. A little may be judiciously used in covering up black shadows; but, as a rule, it should be avoided in colouring photographs.

**ALFRED STANTON.**—It is difficult to say which is the best mode of enlarging from a card portrait to life-size, as fine results may be produced by many processes when the manipulator is master of the working. If several copies are required, we should produce an enlarged negative by one of the methods recently described in our pages. If one or two copies only were required, we should use the collodion transfer process, also recently described in our pages and in our last YEAR-BOOK. The price of Captain Abney's book is 2s. 6d.

**G. SEBRIGHT.**—Being an old subscriber, you have doubtless read the various articles and discussions on the subject of enlarging and reproducing negatives which have recently appeared in our pages, from which you will glean much more information than we can give you in this column. If you have not had practice in this direction, and require at once negatives, to get on with commercial work, we should recommend you to get a few negatives enlarged and vignetted from some one who undertakes such work for the trade, such as the Autotype Company, Mr. Edwards, or Mr. Croughton. Should you wish to undertake the work yourself, we should recommend you to print your transparency on a dry plate, if you are familiar with a dry process, or on collodio-chloride, which is one of the most simple plans, and vignette it as you would a print. Then produce your enlarged negative from the transparency so obtained. You will find many valuable hints in the little work, "Photography in Four Lessons," just issued by Mr. Solomon.

**DARK.**—The photographs to which you refer are fine copies of Thorwaldsen's well-known bas-reliefs, and are photographed either from the originals or from fine casts. They are produced on the Continent, and are published in this country by Marion and Co., of Soho Square. They are doubtless copyright.

**T. S. Z.**—Your landscape lens will answer the purpose very well. Use the largest stop which will give definition to the edges of the group. You must ascertain that at the time by examining the focus on the ground glass. An ordinary fifteen or twenty-grain developer will answer.

**J. & G. R.**—We have no more information on the subject of Mr. Bigelow's studio than is given in his own description. His aim is to illustrate certain principles of lighting rather than to describe a precise size and plan of studio for everyone to adhere to.

**T. STOKOE.**—Our publisher can supply the YEAR-BOOK for 1873. The gold solution to which you refer is manifestly a stock solution to be added to water in the proportion of one ounce to four or five of water.

**R. F. J.**—We regret your decision, and the cause; but we cannot, unfortunately, discuss it in these pages.

**A. HARRISON.**—Thanks. We shall publish the communication shortly.

**G. F. T.**—The "requisition" was got up by one or two persons, and the signatures were obtained by hard canvassing, and bearing the brunt of many refusals. One gentleman who refused informs us that he was urged with very plausible arguments, which he fortunately withstood.

**L. O.**—Dissolve twenty grains of bichloride of mercury in an ounce of water, and place a good vigorous positive into this solution, and leave it there until the image is quite white. Then wash well.

**G. O.**—The lighting is very good, and the portraiture generally is good. The "Rembrandt" style generally includes strong lights and deep shadows, but these should be harmonized by perfect gradation of half-tone. Some persons prefer the lights somewhat stronger, or more vivid, than is found in your specimens; but there is great risk, in such case, of producing hardness.

**G. MACKIE.**—You will find the lens you have (No. 1) will answer very well with a moderate stop. If you purchase, we should prefer No. 3.

**AN IRRECONCILABLE** contests Mr. Woodbury's views on the subject of the award of medals, which, he thinks, should be "given to the best men, in the society or out of the society; in the council or out of it." But, he adds, "it ought to be an absolute condition that no medal should be awarded to anything which has been patented. If a man, having made an invention, patents it, to keep it to himself, he certainly ought not to expect to receive special honour for taking care of number one. He may have a perfect right to the pudding, but he should be content without the praise." As we have before said, any discussion on medals is premature. It will be quite time to discuss who shall receive them when it is certain that anything of the kind will be distributed.

**ASHBY ZOUCH.**—We do not know any style under the specific name of the "New Berlin Card," nor have we heard of any special novelty in portraiture which has recently been produced in Berlin.

**ANTOINETTE.**—A process was proposed in which a print, dipped in dilute acid, and then placed upon a plate of zinc, would, by the galvanic action set up between the two metals, commence an etching action. We have never heard of the process being put to any practical use. 2. We cannot with certainty tell you whether the Autotype Company now permit visitors to see all their operations. We believe that, on application, you will obtain permission to see the ordinary operations of carbon printing. Their negative enlarging process involves some secrets which they will not, of course, exhibit to visitors.

**M. L. D.**—See article on the subject, and other letters.

**ERRATA.**—Mr. Johnson, writing to us from Paris, mentions that M. Walery is now resident in Paris, not in Marseilles.

**CLEMENT ROGERS.**—Thanks: we will make an extract. Several Correspondents in our next.



## The Photographic News, March 6, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### PHOTOGRAPHY IN THE THEATRE—WASHING SILVER PRINTS—EDUCATION OF PHOTOGRAPHERS.

*Photography in the Theatre.*—It is now many years ago since the attempt was made in Paris to photograph a tableau on the stage, in some brilliant spectacular piece, *La Beche au Bois*, if we remember rightly. A most striking and brilliant scene was chosen, with the dramatis personæ carefully posed, and illuminated as vividly as possible, and a representation of the *coup d'œil* was sought to be secured in the camera. The experiment failed, as one might have foreseen, and recourse was then had to a stage and scenery devised especially for the purpose of photography, and which was illuminated by daylight. A result of some kind might no doubt have been secured if the stage and accessories had been illuminated for the time being with magnesium powder and other brilliant fires; but then, as play-goers know very well, when they light up at the wings at the tag end of some brilliant fairy spectacle or transformation scene, it usually spoils the whole effect, and, while imparting quite a garish look to the artistes and their drapery, show up the tinsel and tawdriness of the scenery in their full aspect. Therefore, although pictures could doubtless be secured under such circumstances, they would be scarcely worth having, after all, the colours and contrasts appearing quite different under the effect of these strong lights to what they are before the foot-lights. Recently, however, oxyhydrogen illumination has become more common in our theatres, creating quite a revolution in some respects. In the brilliant scenes of a burlesque or extravaganza at the big theatres, as many as ten or a dozen oxyhydrogen lamps are employed to illuminate the scene, yielding a light of the most vivid brightness. It is the custom, too, at first-class houses, where *spectacle* is particularly attended to—as, for instance, at the Gaiety Theatre—to choose the colours for costumes, not as they look best by daylight or gaslight, but when under the influence of the most powerful oxyhydrogen flame, so that the tints, whether they harmonise or not under ordinary circumstances, shall do so most completely before the audience when properly illuminated. It would be interesting, therefore, to see whether, with the aid of this stronger illumination, and with scenery and costumes suited to the more brilliant lighting up, a camera picture could not be secured of the pretty tableaux and pleasant landscapes often presented to the eye in Vesta's temple. Whether the scenic artist and costumer could not again learn something from the photographic results thus obtained is also a question, either by comparing the picture with photographs from nature, or studying the effects of light and shade thus registered. A very ludicrous incident connected with the photographing of scenery came under our notice a short time back. The proprietor of some pleasure gardens near London erected at the one end of his grounds, on the further side of a sheet of water, a city of palaces on cardboard, or rather on canvas, after the manner of the old Surrey Gardens, which some of our readers may remember. The effect of distance was very cleverly portrayed, and, as the public could not approach very near because of the water, the illusion was most complete, especially towards twilight. The proprietor was not a little proud of his castles in the air, and, fearing that the drenching rains of our uncertain climate might "dissolve, and leave not a rack behind," of the beautiful structure, he resolved forthwith to have a photograph taken. Whether he secured a portraitist or landscape photographer to do the work we are not aware, but any way, all exertions of the operator failed to give a satisfactory rendering in the camera. The skylight of the scene, which to the eye was scarcely perceptible, so cunningly had it been painted to match the atmosphere beyond, came out in the photo-

graph as a sharply defined outline, giving one the notion that if man might be imposed upon, the camera, at any rate, was not. The photograph, indeed, clearly proved the whole to be a sham and nothing more.

*Washing Silver Prints.*—Whatever may be said regarding the fading of silver prints, it is very certain that the leaving of free hyposulphite in the pictures, after fixing and washing, is due simply to sheer carelessness. The testing for hyposulphite by means of starch faintly coloured with iodine is a most simple matter, and, moreover, one of the most delicate tests that can be employed. Pictures to be examined are simply steeped in a small proportion of hot distilled water for a short time, and this water, poured into a test-tube containing iodide of starch, will bleach the latter in the case of hyposulphite being present. Nothing removes hyposulphite so readily as rinsing in warm rain or distilled water, and it is a good plan to effect the last washing in this way, for if the prints have been soaking, no matter how long, in very hard and very cold spring water, the chances are that the noxious salt has not all been altogether removed from the body of the paper. Those who desire to know how to make a quantitative examination of hyposulphite in paper or cardboard should read Dr. Vogel's capital article on the subject in our last YEAR-BOOK.

*Education of Photographers.*—It is a pity there is no opportunity afforded to practical photographers to obtain a sound, scientific teaching of the principles upon which their art is based. Your professional photographer at the present day is either a very capable artist, who has taken to photography because he finds he can realise his ideas more quickly and quite as efficiently by the aid of the camera, or one who has previously been an assistant, and has become a master. The chances are that the former will always remain a good artist and an indifferent photographer, while the latter will work with clearness and delicacy, and his failing be a want of artistic knowledge. Of course there are many, now-a-days, who have very nearly attained to perfection, both in the artistic and technical branches of the art, but these are in the minority, and we do not speak of them. To give the artist a greater knowledge of chemical and technical matters connected with photography, and to impart to the practised manipulator some idea of art, are things equally desirable; and to do this properly we are in need of some institution or association. Lectures alone on the subject would not suffice, but demonstration and personal instruction are required. We cannot think that the time is very far distant when we shall have such a want as this satisfied.

### ON THE USE OF THE CAMERA.

BY A. S. SOUTHWORTH.\*

I HEARD a gentleman speak of receiving a card of the name of the sitter. When my sitters come into the room I want to be acquainted with them. A card with their names on it would not suit me at all. I would take them by the hand, and relieve them of their drapery that they wish to lay off; make them comfortable; point them to the room where they can take care of and dress themselves as appropriately as they please; then I ask them into the light-room. I do not always leave them in the dark. I bring them into the light-room that their eyes may be accustomed to the light in which they are going to sit. You go around into the room, and show them the objects of interest; view their faces in the different lights, and get familiar with their countenances, and endeavour to call out their ideas.

Remember that expression is everything in a photograph. All else—the hair, jewellery, lace-work, drapery of dress, and attitude—are only aids to expression. It must at least be comfortable, and ought to be amiable. It ought also to be sensible, spirited, and dignified, and usually, with care

\* Condensed from a paper read before the N.P.A., U.S.



and patience, may be so. A little practice, with a friend to prompt, before a mirror, will save time, and very likely be the means of much increasing the satisfaction of those for whom the likeness is made.

The hair in its arrangement should assist the proportions of the head. If the head is too long and the face thin, the hair should widen and round the features. If the cheekbones are too high and too broad, the breadth of the head should fall lower down, so as not to exaggerate features already too large. The hair may be smooth or lay evenly, but should never be sleeked or matted down; and the practice of shaving the forehead or pulling out the hair is altogether too barefaced for a lady. It should be arranged in curves, waves, or curls, avoiding angles and horn-shaped protuberances. Caps, turbans, lace, and jewellery, should conform to the same rules in aiding the general contour towards good proportions.

All lace-work should be light and thin, never massy, though it may be white or black to suit the occasion. Flowing curls, for misses, over a low-necked dress, or for young ladies with haudsome outlines of neck and shoulders, are picturesque and pleasing, but thin necks and projecting collar-bones require high dresses with lace, whether in fashion or not. The same remarks apply to arms and hands. If not filled well, with good outlines, let them be appropriately covered in a picture. Simple jewellery may be taken, but if heavy or massy it is not admissible, except for fancy pictures. If the figure is good, the fashion of the dress should show all handsome lines or curves, and hide all that are not so. If the figure is not well proportioned, the fashion of the dress should make it appear so as nearly as possible. It is ridiculously absurd for all females to adopt the same fashion; one exact size and pattern for all would hardly be more so. Whatever the fabric selected, avoid large figures or broad stripes.

Figures of the same material and colour—as watered, striped, or figured dark silks, or very narrow-striped light silks—are well suited to the photograph.

Dark colours are generally more appropriate than light. Fair complexions may, if the figure is represented on a small scale. Remember that positive red, orange, yellow, or green, are the same as black, or nearly so; and violet, purple, and blue are nearly the same as white, and arrange your costume accordingly. Rich figured shawls or scarves and dresses usually show well in a picture. Full promenade, carriage, or riding dresses look well as such, although not suited for a simple likeness.

Infants too young to sit upright should be taken in their long frocks, but when a little older their feet need not be covered; but the whole figure may be prettily taken if they can be kept quiet four or five seconds. As a good rule, let the frock be very low in the neck, with short waist, not tight, yet fitting the form, reaching to the foot; the sleeves very short and loose, ornamented with narrow lace. The skirt should be of woollen fabric, not too full, reaching about half-way from the knee to the ankle, and worked, figured, or scalloped around the bottom. No other underclothing should be worn, except of the thinnest and most pliable material.

If the child is taken half-reclining, the bottom of the dress can easily be arranged to show parts of the bottom of the skirts, and the feet and ankles, and all be in good keeping and taste. The colour of the frock may be pink, drab, blue, or any colour which will show light in the picture.

Especially should it be permanently impressed upon the "sitter" for a photograph that the artist has in reality no control over the actual expression of the subject, which is the important part of a photographic likeness. Having disciplined the features of the face until controllable, select an hour for sitting when you may be in your best mental, as well as physical, condition. Arrange dress and drapery in your most tasteful and graceful manner, so that it shall be at least to your own satisfaction. A

figure laced to suffocation, a foot aching under the pressure of a too diminutive shoe, or the hair drawn and twisted so tightly as almost to lift its wearer from the floor, thus imparting stiffness and awkwardness to expression, even in repose, are but a few of the obstacles with which it will be useless for an artist, however patient or earnest he may be, to contend.

The hour of departure on a tour or travel, a few hasty moments snatched from a shopping excursion in town, or between hurried morning calls and dinner, will not be likely to find one in a sufficiently fresh and quiet mood to yield to the hints the artist may desire to throw out expressly for the sitter's benefit. It has been said that "the most terrible enemy the photographer has to contend with is human vanity." This is in a great degree true. The repeated trials which the artist finds it necessary to make to avoid time's rude finger-marks, to overcome the rigidity, languor, or sadness of expression which diseases or affliction may have produced, are among his difficulties and discouragements. Let not these be increased by the infelicities of time or condition above referred to. On your own account, as well as for the sake of those who will value a correct portrait of yourself, choose the most favourable opportunity, as already suggested, and afford the artist ample time, without haste or nervousness, for his labour.

Next, select the artist in whom you have confidence, and whose efforts are to merit and sustain a high reputation; attend to his suggestions, and feel at home in his rooms, that you may relieve him from all embarrassment, and put him equally at ease in your presence. If you have ideas of your own as to the light and shade of view of the face, suggest freely, and then submit all to him. If qualified for his business he will soon be able to transfer your likeness so as to render prominent the best features, and at the same time conceal or diminish those having least beauty. Aid cheerfully his exertions; and if, with the best efforts of both artist and subject, the result is a failure, charge it not upon his demerits, nor be discouraged, but try again, and you will thus eventually be successful.

Again, have confidence in art itself. There is far more danger of undervaluing than over-rating it. It may not, like painting and sculpture, be susceptible of the expression of feelings and emotions which have been awakened in the mind of the artist, and more nearly realized in his own conceptions. Though it be not to his inner fancy in the creation of scenes, and characters, and forms, which might have existed in a state of higher perfection and rarer intellectual refinement, yet the genius and spirit of poetry must possess the artist, so that he can ever elevate his characters in portraiture far above common nature. He must have power to embody the beauties and perfections of his subjects, and at the same time make clear resemblance and identity. He must keep ideality uppermost, and thus infuse it into the mind of the beholder, so that he be not degraded to a servile copyist, and his art to a mere resemblance. And although, as has been already hinted, he who in painting and sculpture can work to his own ideal has a wider range in portraiture, and can bring colours as well as forms of nature to his aid, yet in the nice production of light and shade, which is the perfection of modelling, the photograph will be found to surpass the artist's best efforts; being capable of representing independently action, expression, and character, to a great extent; and in some instances it approaches very nearly, if it does not equal, these higher branches; thus developing beauty in grace of motion, and in repose, which is the first object and the supreme law of all art.

[Mr. Southworth then proceeded to pose the President, with a running comment on various effects, and then proceeded]:

Now I want to go twenty-four feet from the sitter, and I want to lower the instrument one foot. I do not say you can have this position always. I want the largest



lens that you can 'possibly give me, or that I can get, to take his picture twenty-four feet off; that is, to make it the size of common cartes. I do not want to be any nearer. I mean those large heads on the common cartes, called John Bull cartes, common cartes, common carte size, large heads. Now I do not want to be less than twenty-four feet off. I want the largest lens that I can get to properly focus for that size. Your lens should be at least no less than five inches in diameter. Now my friend Fitzgibbon, of St. Louis, suggested a very nice way of shortening the time, but now I want to make it just a little bit shorter. Instead of using your instrument diaphragmed at all, use it entirely open without any stop, and that will shorten your time, and where it takes thirty seconds the old way, it will now take sixteen. I will make the same in ten, and have the eyes as well defined as you can ask. If there are spots or blotches, you have to touch them out on the negative. You will thus have a softer picture than you can make by retouching, for to save your lives you cannot touch it without hurting it, and men who are making good pictures do the same thing. I do not say if there is any defect that I would not put a piece of soft prepared chalk on, but I say, let it alone. As to the shadows, you cannot touch a shadow without injury. You must place your picture so as to have a good light upon it without shadow and without retouching.

Before I begin to raise my camera, I have said to my sitter, Now there are some things I would like to have you not think of. I cannot help it when they are sitting for a picture, and after I think I am ready for it, I will direct them as to the line of vision. You will please to look at that point if you want the picture to be looking at you, and I must make it so that it falls directly on that line on the edge of the tube or over it, and I want you to look as though you were looking ten miles out at sea. You can open and shut the eyes with the most perfect freedom. You must give a light in which they will not blink. I make it as comfortable as I can, and pay attention to that point while I am taking the picture. The eye must be used at its longest range. You must tell them to look just as far as they can, and let them practise on that look, and you will have it right in the picture. You will not get it cross-eyed. One half the pictures are thus made. The eyes are this way and that way. They are just cross-eyed. Now, if a person is cross-eyed, he never should be drawn so to to that extent. In some of those larger pictures, the eyes are looking at you as if you were only eight feet distant. Now, what is that for expression? It is dead. You cannot wake any life in it. The expression is not good for anything; the eye is not good for anything.

I say, then, with regard to the direction of the eye and the opening and shutting of it, it should be perfectly natural. Now I have arranged the light. I have a sky-light that is pretty high. I cannot have too much room. I have just enough light, so that the sitter can open and shut his eyes easily without blinking.

So much for the arrangement of the light. A single word now should be said with regard to reflected light. Having arranged the light so as to give the shadows the diffused light and shadows as I want them, then I want to look out for this little point, and that is, to the light in the eye; and if you get two points, it will be bad, but if you get one, and this reflects the light, why it looks like one of those that has a film growing over it. The eye is dead. The first thing is to get a good eye, and more than that, the eye must be so made in addition that it will look like a little star, but one light.

I repeat, then, have your lenses as large as your tubes can be; make your pictures as far off as you can get the camera, twenty-four feet distant; with the smaller cartes, get a little nearer, or go further off, and you will find that you will make your picture soft. You will not need to retouch. You will have a good effect where you have this softness; you will have light where you have

black, or the kind of blacks you have now. Nearly all of the so-called Rembrandts—I speak of them so as to call your attention to that class—certainly one-third of all there are—indeed, nine-tenths of those made in the Rembrandt style—are not looking as I have described. Take it while the light is run into the shade; on that side of the face there is not one bit of that black or hardness on the face. It is warmed up with reflected light and with colour. This is terrible; it is terrible to the artist; it is not true; it has simply been quackery from beginning to end, and the worst kind of quackery, to take a person's face with the shadow next to you; it is all proper; the warmth and the shadow are there, so when you look at it you will understand it. You want to make the picture so that every time you take it up you will see new beauties in it, and so you will love to turn over an album of such pictures, every single day to examine the effect of fine photographing, and I tell you it is done a great many times, by a great many artists constantly, and by some constantly, but it is not done by true artists at all. You will excuse me, I am only talking for the very highest reach of our art, but you will tell me that I have aimed a little above it. I did not, but never mind the aim; you must aim high, and you will not be down there long; you will be coming up, and if you never get to the top, you will have a feeling that you are making the very best effort, and perhaps, if you live long enough, you will reach it.

## THE DEVELOPER.

BY B. P. OREENE.\*

I HAVE tried nearly all the dodges of using other substances in connection with protosulphate of iron—such as sugar, rock candy, epsom salts, gelatine, double salts of iron and ammonia, &c.—but have always fallen back on simple protosulphate of iron and acetic acid. I have come to the conclusion that other things are only an extra expense, and of no use only to retard the action of the iron; that the same results can be obtained by using a weaker developer, and save the cost of the other ingredients added as retarders.

My formula for preparing the developer is as follows:—

### Stock Solution.

Protosulphate of iron (pulv.).	...	1 pound
Warm water	...	2 quarts

For every day's use take eight ounces of stock solution, and three ounces of acetic acid; filter into a quart bottle, and fill up with water, making it in strength two ounces of iron to the quart.

This is the strength I prefer for ordinary purposes. Sometimes you may require it stronger or weaker; that you can vary to suit your work in hand. The shorter the exposure the stronger you want your developer; for that reason it is a good plan to have a bottle of developer in your dark-room, the full strength of the stock solution, with acetic acid added, three ounces to every eight ounces of stock solution.

The method of using will depend very much on the subject in hand; as a general thing, the stiller you hold the plate, and keep it covered with the developer, the better will be the result. If you see the image is coming out too thin in the high-lights, rock the plate so that the developer will wash out the silver in the shadows and deposit it on the high lights; but if it shows too much contrast in light and shade, hold as still as possible, so as to retain all the silver in the shadows that is possible. For solar negatives I should flow the developer freely, so as to wash off all the surplus silver from the plate; then hold still, and let the image come out fine and even; I never use any alcohol if I can possibly help it. I prefer to work over my bath, and free it from the alcohol, than to try to work a bath that you are compelled to use alcohol in the developer with.

\* Read before the Photographic Institute of Chicago.

In landscape work, I always carry a saturated solution with the acid added, and reduce as I want to use it. I have two reasons for this: 1st, it is less bulky, and lighter to carry; 2nd, we are compelled to vary the strength more in out-door work than you are in gallery work. Sometimes—for instantaneous work, and very poorly lighted interiors—I use the full strength of the stock-solution. Also, in the woods, where the foliage is very dense, you are compelled to use a strong developer to obtain detail, while, on the other hand, if it is pretty much all light, I use a very weak developer. The stronger you use the developer, the more detail you will get, while the weaker, the more contrast.

I do not wish to be understood to say that strong developer makes the best work, for the quicker the development, the coarser will be the deposit of silver. Therefore use your developer as weak as you can, and obtain the proper amount of detail.

### NEWS FROM THE SUN.

BY DR. SCHNAUSS.\*

DAME NATURE has established her great chemical laboratory, so far as we inhabitants of the earth are concerned, in the sun. Of this we have convinced ourselves by means of spectrum analysis. The sun is, in fact, a terrific furnace, where Dame Nature is constantly heating retorts, flasks, and crucibles on a gigantic scale. It matters little to her when a gasometer bursts and a glowing flame of hydrogen spurts into the air some twenty thousand miles or so; on the contrary, these explosions, bringing about certain decompositions and combinations, are just the sources of the sun's warmth, which is so indispensable to us mortals.

Despite the respectable distance of the sun from the earth (about ninety-one millions of miles), we know, thanks to the perfection of the optical and chemical means at our disposal, a good deal about the various phenomena that occur upon its surface. Now we photographers, although not actually belonging to the sect of sun or fire worshippers, have more real cause than most other men to hold the luminary in grateful remembrance, and ought, therefore, to make ourselves acquainted with its doings so much as it is in our power to do. We shall pass over what our readers have learnt long ago from old geographical and astronomical books, and will only remind them that we—or, rather, the earth—enjoy the honour of being descended from the sun. Since the parting of Mother Earth, it may be for ever, from the sun, she has gradually become cooler, and thus it has become possible for us puny creatures—and, in fact, everything that crawls and flies and grows—to exist and live without being turned into cinders. And the few million years that have elapsed the sun has not allowed to pass by uselessly, but, on the contrary, the time has been employed for the creation and cultivation of plants and trees, designed, in future generations, to afford provision for latent warmth, so that material may be forthcoming for their railways and manufactories; for without coal these could not be thought of, and this, it must be borne in mind, is a product of the sun's warmth and sun's light for hundreds of thousands of years.

We find ourselves here on earth, then, with an agreeable and cool temperature, whilst our ancestor the sun still glows with revolutionary fire, affording us a proof that permanent revolutions even are of some good, provided always that they are kept at a respectful distance. We enjoy only the good, while the sun itself renders it impossible for any living animal to exist upon its surface with a glowing temperature of about 27,700° Centigrade. An oxy-hydrogen blast flame would be quite cool in comparison.

The sun is, moreover, wrapped up in three envelopes, which we, according to our way of thinking, term atmospheres. The uppermost one is called the crown, or corona;

under this lies the atmosphere of colours, or chromosphere, which gives the strongest illuminating power; and the envelope lying round the sun itself is termed the photosphere. These three atmospheres are in a constant state of great agitation, the most violent storms rushing to and fro everywhere. Here is a capital description, given by a scientific man, of these phenomena:—

"In the stupendous sea of glowing vapour constituting the surface of the sun, there are formed continually, now here, now there, fountains of glowing hydrogen, bigger in diameter than the whole of our earth; they are thrown up in a glowing mass, to a height equal very nearly to the distance that our moon is from the earth. These immeasurable masses of glowing matter, which could sweep away the earth as easily as a steam of water carries away a cork upon its surface, then sink down in the sea of vapour, and give rise to circling waves upon the luminous surface many thousand miles in diameter. There is a raging storm of crude matter going on upon the sun, a wanton contest of glowing bodies, of which no living man dreamed before the luminary had been examined by means of the spectrum. And it may be anticipated that when once the energy of that Titan is exhausted, then the source of life of us poor earthly pigmies will be sealed."

The well-known spots on the sun, which may occasionally be seen by the naked eye upon the sun's disc when the latter is covered by a translucent cloud, and which are observed to progress slowly and uniformly (re-appearing in the course of some weeks or months, and thus affording a means of calculating the time of revolution and locality of the equator of the sun) these spots are, according to the recent investigations of Zollner, in a measure condensations of portions of the gaseous atmosphere of the sun, similar to the slag in a furnace. Many of these spots have a diameter of more than a million miles.

The so-called protuberances of the sun—which, especially in eclipses of the sun, are seen together with the corona, and have so often been photographed—are the flaming pillars of burning hydrogen of which we have just spoken. Besides these phenomena, the spectroscope has proved to us that a number of elements exist in the sun's atmosphere which also exist in the earth, such as iron, zinc, nickel, copper, manganese, calcium, sodium, and oxygen. All these exist either in a glowing vaporous condition, or in a burning state. Our dearly loved gold and silver have not as yet been detected among all the other elements in the sun, but we hope, as our knowledge increases, and our chemical and optical means of investigation attain to even greater perfection, that we may get to know many things new to us going on upon the sun, although at the present day actually there may be nothing new under the sun.

### REVERSED NEGATIVES BY THE POWDER PROCESS.

BY C. H. JACOBI.\*

In mechanical printing a reversed negative is essential. This may be obtained by placing a reflector in front of the lens, by producing the image in the camera on the reversed side of the plate, or by stripping the collodion picture from an ordinary negative by means of gelatine and leather collodion, the negative in this case, however, not being varnished previously. To strip off a varnished film from the glass is quite a conjuring trick, which fails ninety times in a hundred, and, therefore, in the case of a finished negative, the only way is to reproduce it in a camera, or by contact printing. In both these cases a positive is produced in the first instance, from which the negative is afterwards derived. I usually obtain the dia-positive in the camera, and then secure a negative from this on iodide of silver or collodio-chloride plate by means of contact printing.

In this way, however, it is difficult to produce so soft and harmonious a negative as the original, and for this

\* *Photographisches Archiv.*

\* *Photographisches Correspondenz.*



reason I tried another method of reproduction—the powder process—which yields a much finer grain, and necessitates no positive. In the first place, I obtained, by the advice of Dr. Liesegang, some very fine chalk (Conté Kreide No. 2), which I reduced to an extremely fine powder, and found answer my purpose very well. A second supply of the same material was, however, of a much greener tone, and this held back the light and gave a harder negative. As in Lichtdruck and mechanical printing, with half-tone, a soft negative is very essential, I tried if a better powder could not be obtained from graphite, and found that when finely levigated this gave great promise, and I now prefer it to all other powders for the special purpose required.

The sensitive mixture for producing the image which I employ is no great secret, for many formulæ have been published; I usually mix in the following proportions—viz:—

Gum arabic	...	...	...	...	1 part
Water	...	...	...	...	40 parts
Sugar	...	...	...	...	2 "
Bichromate of potash solution (ten per cent. in water)...	...	...	...	...	7½ "
Solution of honey (one part honey, and two parts water)	...	...	...	...	1½ "

The temperature and moisture of the air must be taken into consideration in making the mixture, and the proportions of sugar and honey varied accordingly. The mixture is applied warm to a patent plate glass (which has also been warmed) being of a uniform and thin consistence; it is dried rapidly, and then exposed to light under a negative which has also been slightly heated.

After exposure, the plate is taken from the frame and developed by means of a brush and the developing powder. Some skill is necessary to treat a large plate successfully with powder, so that no dark spots are produced. Care must be exercised to see that the dark room is not in a damp state, as otherwise smeary patches will inevitably be produced. When the dusting is finished, normal collodion is poured over the same, and before the film is perfectly dry it is washed with clean water, and subsequently varnished.

The main point in the powder process is to have the original negative upon as smooth and even a glass plate as possible—such, for instance as patent plate—so that no sharpness may be lost. And in reference to negative, I may state that year long experience has taught me to prefer soda fixing to cyanide of potassium. A large portion of beautiful plates which I have transferred by means of gelatine have become so dense, although stored in the dark, as to become quite unfit for printing.

#### ALBUMENIZED PAPER.\*

OF the many things which photographers make use of in their daily work, there is none so little cared for in photographic journals as albumenized paper; and as it is one which plays a by no means unimportant rôle in photographic operations, these few remarks may not be out of place. We do not propose to go into the matter of manufacture of the material, so much as to regard the subject from the consumer's point of view, and to indicate certain principles by which one should be guided in regard to the material.

In the manufacture of any article, two points must especially be borne in mind, viz., either it is a product created out of raw material, or something due to the further elaboration of such product. It is to the latter class that the preparation of albumenized paper belongs, for this material is due to the further treatment of a simple product—paper—with albumen; and it is to the circumstance that the finished material always depends upon the quality

of the first product employed that so much variation in its nature is due. Even if an albumenizer of reputation exercise great care and attention in the preparation of the albumenized material, he is still dependent in a great measure upon the quality of the original paper; and it is, unfortunately, on account of imperfections in the latter—such as impurity of the pulp, unevenness in sizing, and in the strength and pressing of the paper—that the defects in albumenized paper are mostly due. As, notwithstanding recent improvement, it has been impossible for manufacturers to make paper, as regards purity, sizing, and strength, perfectly uniform in every sheet, and there is no probability of such a desideratum, it is idle to look for absolute perfection in a material which it is out of the power of the albumenizer to control, for he, of course, cannot set aside the defects which already exist, and cannot be held responsible for them.

Most of the well-known albumenizers have succeeded only after years of experience in producing a uniformly good product, and are always exerting themselves towards supplying a faultless albumenized material—a step necessitated, in a great measure, by the competition existing between manufacturers. There is, perhaps, no other article employed in photography which, in its manufacture, is connected with so many difficulties as albumenized paper; and this, it should be remembered, served for the printing of photographic results all the world over, as being frequently inveighed against by photographers, who often charge it with defects which might be overcome by increased attention on their part. Many photographers desire a very glossy surface to their paper, which is easily attainable by securing a concentrated surface of white of egg; but these also require, at the same time, that the paper shall tone quite as rapidly as one which has a thinner film of albumen on its surface. This, as a matter of course, cannot be the case; for the former kind of paper requires very particular and especial treatment, as we shall state presently. Moreover, one cannot very well demand, seeing that there is no other practical method of drying at hand than that of hanging up the prepared sheets, that albumenized paper with a single coating shall yield pictures from the top of the sheet of equal vigour to those printed on the lower portion, upon which there is so much more albumen.

The observation, often made, that albumenized paper, and especially that of a white description, soon becomes yellow, has its reason in the different kind of sizing material applied to the original paper. The consumer may help himself in this matter by acidifying the sensitizing bath, and only employing fresh soda solution in the fixing of such papers. We might quote many such points, but will confine ourselves to giving a few short notes which it is well to observe in dealing with albumenized paper; and we may state that due attention to these will result in the obtaining of favourable results.

a.—The silver bath, which may be prepared of a strength of one to eight, or one to ten, should be kept at a uniform strength; maintaining the same in motion, and floating for equal periods, are the points to be attended to.

b.—In the case of highly-albumenized paper it is essential, so as to prevent blistering, to prepare the soda bath fresh every day, and not too strong (say 1 to 10 or 1 to 12). A weak soda bath never requires to act for longer than a quarter of an hour, in order to fix pictures thoroughly.

c.—The first washing waters before and after toning should be as nearly as possible of the same temperature.

d.—The toning bath is best employed of a weak nature, and in large quantity.

e.—Sensitized paper, as likewise finished prints, should never be dried too rapidly. The latter are best mounted while in a damp state, in order to prevent any tearing or splitting of the film in the operation. It is also well not to allow prints to dry before being put through the rolling-press.

# The Photographic News.

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## DISRUPTION IN THE PHOTOGRAPHIC SOCIETY.

ACCUMULATED communications are before us urging that some steps should be taken to give effect to the views of country members in relation to the present crisis in the Photographic Society. One of the most distinguished of provincial photographers, whilst deprecating the course which has been taken by the requisitionists, regrets that the council did not appeal to the country members against the vote of a few, rather than place the power in their hands by resignation. Another, an exhibitor of some of the finest pictures at the late exhibition, remarks, "What a sad mess these narrow-minded requisitionists have made of the society's affairs! The unfortunate thing is that at present the country members are quite powerless to help the council. I hope, however, that some means may be adopted to checkmate these men, and that the late council may once more be reinstated in office." Other communications are to the same effect. We are informed that the existing fragment of a council, consisting of five members, have resolved to bring out a number of the Journal before the next meeting, in which a counter-statement in opposition to that of the secretary in the last Journal will be made. As this must either form an extra number, or involve a delay of upwards of a month in issuing the report of the next meeting, a heavy expense to the society, or a serious inconvenience to members, must ensue. As it is possible the "innings" of the present authorities may terminate very abruptly, the issue of an extraordinary number of the Journal may possibly be their only chance of telling their own story in their own way. The committee of revision have devoted much time to their work, and intend, we believe, to send out a code of revised rules for the consideration of each member in the Journal referred to, the aim being to give form to their wishes before consulting the members generally. As an interval of less than a week exists, at the time we write, before the next meeting, and such rules have not yet been sent out, there will be brief time for their consideration before members are asked to vote upon them. We understand that Mr. Hooper intends to bring a motion before the meeting to the effect that the president, vice-presidents, treasurer, council, and secretary, be requested to resume office for the remainder of the session, and that at the next annual meeting all officers be elected in accordance with new rules to be decided upon. Dr. Mann and some other of the requisitionists will, we understand, support this motion; but whether it will meet with their general acceptance it is impossible to say. Such a course would be wise, as showing a conciliatory spirit. We have no

means of even forming a guess of how far it would be acted upon by the council; but we can readily see how their acceptance of the position, with a distinct understanding that they would resign their offices into the hands of the society at the end of the year, would tranquilize and satisfy a large section of the society, and possibly prevent a serious secession of members. Mr. Hooper has asked us to press all members—country and otherwise—to attend and support his motion. We give his request publicity, but, for obvious reasons, we can do no more.

## NEGATIVE RETOUCHING.

A METHOD of preparing the photographic film for retouching is published by M. Julius Bildt in the *Photographisches Archiv*, which that gentleman states he has employed now for some time past to good purpose. In retouching, one of the great objects to be attained is, of course, a good surface upon which the pencil can be manipulated with facility; and M. Bildt says that the blacklead may be applied to the coating he recommends as readily and as effectively as upon paper.

Two solutions are made up, the one consisting of—

Gum-arabic...	...	...	1 part
Water	...	...	7 parts,

and the other compounded of—

Bichromate of potash	...	...	3 parts
Water	...	...	7 parts.

As much of the latter is added to the gum solution as will render the same of the colour of Madeira; the solution is then ready for use, and should be preserved and applied to the plate in the dark.

The negative is fixed and washed in the ordinary way, and before being dried is treated with the bichromate and gum liquid, which is poured over just as if it were collodion. The film is then dried in a place sheltered from the light, and then exposed to daylight for about half-an-hour. In this way a kind of insoluble varnish is formed over the negative, which is of a matt and very firm nature, upon which any kind of retouching may take place with the pencil. The Faber pencils Nos. 3 and 4 will be found easy to use upon the surface, the finest pencil-lines being possible in the shadows and elsewhere. This film of bichromated gum does not in any way injure the cliché, and may be employed as unhesitatingly as any other kind of negative varnish.

## A RESIN AND WAX TANNIN PROCESS.

M. CLAVIER, a photographer at Algiers, recently made known to the French Photographic Society the formula for a dry collodion process which permits him to obtain architectural negatives with a globe lens in twenty or thirty seconds, and landscapes, with foliage, in forty to seventy seconds; while interiors, which required a quarter of an hour with the ordinary tannin process, are secured with an exposure of two minutes.

A glass plate, after being thoroughly cleaned, is covered with a preliminary film of dilute albumen—the white of one egg dissolved in one litre of water—and, when dry, the collodion is applied. This is prepared in the under-mentioned proportions:—

Alcohol	...	...	50 drachms
Ether	...	...	70 "
Pyroxiline	...	...	1 to 1.20 "
Iodide of cadmium	...	...	0.30 "
Iodide of ammonium	...	...	0.30 "
Bromide of cadmium	...	...	0.60 "
Wax and resin solution	...	...	2 "

The solution is obtained by dissolving, by means of a water bath in a glass flask, three grammes of yellow wax or white wax in thirty drachms of alcohol, and, after cooling, a further similar amount of alcohol is added,



and the liquid filtered through blotting-paper. Finally, 3.75 grammes of powdered colophane or gum resin are put into the liquid.

The plate, having been coated with this resinous collodion, is sensitised in an eight per cent. silver bath, slightly acid; and having been immersed for a sufficient period, it is taken out and carefully washed. It is then covered with a one per cent. solution of tannin in water.

Plates thus prepared will keep good for a very long time without losing their sensitiveness; they may be developed by any process applicable to dry plates.

### GELATINING ALBUMENIZED PRINTS.

THE *Photographisches Archiv* contains a bit of practical advice on the question of coating albumenized pictures with gelatine to give them a *glacé* appearance. A very great deal, we are told, depends upon warming the glass plate which is pressed against the gelatine surface, for the latter, as the experimenter will know, is very liable to become disfigured by the presence of air-bubbles. The mode of operating given by M. Meusen in the above-named journal is very simple, large pictures being treated without difficulty. The prints are trimmed and mounted on cardboard, which leaves a margin of a quarter of an inch—rather broader than usual, therefore, and allows for cutting down after the gelatine has been applied. The prints are retouched, and then well rolled in a press. A thick solution of warm gelatine is prepared, and the pictures dipped bodily into it, and transferred, face downwards, to a glass plate which has been collodionised some half hour beforehand. This glass plate is kept in a warm state, being placed upon a heated lithographic stone for the purpose. If the gelatine is slightly heated, the plate pretty warm, and the collodion thoroughly dry, it is very seldom that one will be troubled with air-bubbles.

Any superfluous gelatine is removed by means of a sponge and warm water, after a rubber squeegee has been passed over the surface. In this way most excellent results are achieved, and, as rule, twelve pictures out of a dozen secured, so trustworthy is the process. In six hours after the pictures have been gelatinized they detach themselves spontaneously from the glass. As a rule, it is best to apply the gelatine in the evening, and the prints are then ready in the morning. One thing is essential: so that the pictures may not dry too rapidly, it is well to turn the glass uppermost, and lay the backs of the prints upon a damp cloth. Care and cleanliness are the two things needful to secure success.

### ALBUMEN EMULSIONS OF SILVER SALTS.

OUR correspondent, "A Deaf and Dumb Artist," sends us formulæ of an albumen emulsion of chloride of silver, and a similar emulsion of bromide of silver, with each of which, he states, he has obtained promising results. For the chloride of silver emulsion, he says, to the white of one egg, well beaten, add—

Chloride of ammonium	...	4 grains
Water (distilled)	...	30 minims.

Then take—

Nitrate of silver	...	17 grains
Water (distilled)	...	20 minims.

Add sufficient liquid ammonia to re-dissolve the brown precipitate of oxide of silver. Then drop this slowly into the albumen solution, shaking meanwhile. Paper or glass coated with this is very sensitive. It may be toned and fixed as usual.

The bromide emulsion in albumen is described as follows:—"The white of one egg is beaten as before, and seven grains of bromide of ammonium added, and sufficient ammonia-nitrate of silver added to convert the bromide into bromide of silver. A plate coated with this emulsion subsequently, when the film is set, covered, by immer-

sion or pouring, with a solution of nitrate of silver containing twenty grains of nitrate and three drops of nitric acid to the ounce. It is then washed and dried. Any preservative may be used, and either alkaline or acid development answers."

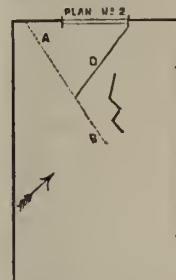
### ON A NEW STUDIO.

BY SAMUEL FRY.

IN accordance with numerous desires expressed that I would send further particulars of my studio, I beg to give herewith a sectional sketch and two ground-plans: the former will explain the height and arrangement of the glass, and the latter the internal arrangements.

One primary intention in the building was simplicity in working, and I believe, after a year's experience with every variety of picture from miniature to eighteen inches, that I may say I never before saw a room in which, with so little trouble, and in so short a time, such a great variety of pictures can be taken.

There are no side blinds, and none are required. A much better effect is given, and one far more under control, by two lofty folding screens, as shown on the ground-plan. These are made of light but strong frame-work,



and three of the four folds are covered with dark green tannin, the other having book muslin strained over it. By the careful manipulation of these screens (and, in particular, the muslin-covered part between the sitter and the light) very fine effects can be produced, infinitely easier than by roller blinds. The muslin filtration communicates a soft and pearly tone to the negative, reducing retouching to a minimum, and producing (with proper arrangements of the upper light) those silvery lights on the nose and rounding of the features so much sought for. When the light is very powerful, these screens may be advanced more towards the centre, and in advance of the sitter. For hard-featured, stern-looking persons, with deep-set eyes, I find I have a power not obtained by other means.

Two spring roller-blinds cover the upper light, and, during fine weather, for eight months of the year, I find that the one nearest over the sitter should be drawn considerably down, and the other one about one-fourth down. But every sitter requires this to be carefully watched.

Very different treatment is desirable for a thin, sharp-featured person, and for a round, chubby one. It is well to have a large cord to the blinds, and then, standing near the camera, watch the effect on the face of alteration. The same with the screen. Very little is required in the way of lighting up the off side of the face; from the large extent of the upper window sufficient illumination is ordinarily found, which in dull weather is supplemented by a

screen covered with grey drawing-paper, being a colour that does not reflect in the eyes. Many of the finest published pictures of a well-known firm are injured, in the eyes of connoisseurs, by the inveterate habit of placing a strong white reflected on the dark side. Avoid this. A silver-grey paper on the room, or a distant screen, will give all that is desirable.

The craving after pictures without shadow is one the cultivated photographer should, by example and precept, discourage. Let him show as specimens, and take in practice, pictures with good transparent shadow, and he will soon find an appreciative public. It is astonishing how gladly the public grasp at the power in a photographer to communicate a feeling of art to his pictures. No mistake can be greater than to suppose he should be a mere delegate to represent only what can be seen. It should be his province to communicate refinement and delicacy to the productions of his skill, and this is perfectly compatible with the most exact adherence to the lineaments of his sitter.

One of the points to which I gave most attention in the building of this room, and which has turned out in every way successful, was to have complete means of working out a number of variations in shadow on Rembrandt pictures. Look at ground-plan No. 2. At the north end, in the dead wall, is a window of ground glass. When at work at fully lighted pictures, a large background, on a frame and castors, covers this up; but when I wish to do a Rembrandt of the now popular kind, with profile and outline in vivid light, and the rest in subdued tones, this frame (D) is drawn out at the left side, the sitter is about A, and the camera on the line marked by dots. By varying the place of the sitter, a large variety of effects of most beautiful lighting are produced. Here a grey reflector is wanted for the off-side. Those who have worked at figures near a window in a sitting room, the spectator being in the darkened end of the room, and watching the play of light on a face, and the lovely gradations, and the immense variety at command, will know what I mean. I had often felt this in a room in my own house, and determined to make in my new studio such a window. The effects obtained are just what was wanted, and the alteration of the lighting is done in half a minute. Just double the exposure is required, but if you think this objectionable, or the plan too troublesome, do not try it, for if you once begin to supply your sitters with pictures taken with this light, they will take care you are obliged to continue them.

Another kind of shadow picture, requiring no more than the usual exposure, is taken, as shown on ground-plan No. 1. The dotted screen is shown in the centre, and the sitter at K, the camera at B K. During exposure the lens must be carefully shielded, being opposite the light. The pictures produced here admit of fuller faced shadow pictures, with the details of the darker side more decided than in the other system, and without the strange outline illumination. It is suited for the *nez retroussé* and celestial, for round, plum-pudding faces, frequently giving them a grace and distinction of look that surprises none more than the possessor of the useful countenance aforesaid.

To be able to make plain people look well in a picture, and to light up an ordinary face with animation, should be the aim of photography in good hands. Nothing does more to advance a man in the estimation of those who want pictures done than to see pictures of people they know who are shown to advantage in photographs. How can you do this, unless you possess the means to do it by having the best possible lighting in your studio?

In plan No. 1, as shown at A A, the sitter can be taken at either end of the room; the camera simply requires turning round. A very important point is, that in this studio there is no glare of light; thus fair complexions and blue eyes are exceedingly well given. It is rare to see in photographs the Saxou complexion adequately represented.

Even in skilled hands, there is too much black and white about the hair and complexion. Of course lighting above will not do this; careful timing and developing, as also rinting, are wanted, and in each the eye ever watchful to detect and suppress what is unsuitable.

Next week I will touch on certain arrangements for ventilating, warming, &c., and a number of small but important details, which are found to add much to successful working.

#### PERMANENT SENSITIVE PAPER.

In the *Photographisches Archiv*, M. Fritz Haugk gives a method for producing sensitive paper which will remain good for a long time, and which, he states, appears very similar to the material which M. Romain Talbot manufactured and sold in Berlin some time ago. It was destined by M. Talbot more especially for non-photographers and those who desired occasionally to make reproductions from plans and maps and such like, and who would therefore wish to have a stock of sensitive paper at hand for employment now and then. Talbot's paper has been well received in many establishments, and photographers may therefore be desirous of knowing how a paper of the kind might be prepared by themselves.

Good stout albumen paper, or plain arrowroot paper, is floated on a bath made up of—

Water	...	...	...	32	parts
Nitrate of silver	...	...	...	3	"
Citric acid	...	...	...	1	part
Tartaric acid	...	...	...	$\frac{1}{2}$	"

One minute is amply sufficient for the paper to be in contact with this liquid, and after this interval the paper is dried, and finally drawn slowly through a weak solution of tartaric acid. In preparing this last named solution, spring water may be employed without fear.

The paper prepared in this manner keeps well, and prints rapidly and vigorously. It requires, however, for toning, a very strong and alkaline toning bath, although, when the paper is employed for technical or scientific purposes, any toning of the print is generally superfluous. The paper will preserve its whiteness for two or three months, provided it is carefully stored away from the light and from a damp atmosphere.

#### VISITS TO REMARKABLE STUDIOS.

##### M. REUTLINGER'S STUDIO, IN PARIS.

WE purpose adding to the list of noteworthy studios, which we have from time to time described after personal inspection, some details of the principal studios in Paris, as described by our esteemed French correspondent, Mons. Ernest Lacan, in our Philadelphia contemporary, in a series of articles on the subject he is contributing to that journal, commencing with the studio of M. Reutlinger, in the Boulevard Montmartre. M. Reutlinger is described as a German who has preserved, during many years' residence in Paris, his Teutonic type and accent. "He is of medium height, inclining to corpulency, with a round face. His hair, which falls rather low on the forehead, is brown, short, and slightly wavy. His moustache and goatee both thin, delicate, and grizzled. His eyes, slightly sunken, have a piercing look under the spectacles which he always wears. He is about fifty years of age, but does not appear so old. He has no special dress for his work, and nothing eccentric in his garments. There is an air of simplicity and good-nature about him which is not belied by his words."

After thus much of the man, we proceed to his studio, which is "in the fifth and sixth stories of a fine house situate on the Boulevard Montmartre, between Vivienne and Richelieu Streets. Two frames hung at the door, which opens on the Boulevard, are filled with attractive portraits (card and imperial size) of our female theatrical celebrities. It is about as much of an exhibition as is



usually made by Parisian photographers. A handsome and wide stairway leads to the studio." After a description of the reception and specimen rooms, M. Lacan proceeds to the studio, of the interior of which he gives the following sketch, taken from the entrance door:—



The gallery, which we are told, is "formed of two man-sards, which have been united by removing the partition that separated them, is 12 metres (39 feet) in length by only 4 metres (13 feet) in breadth. Its height to the top of the upper sash is hardly 5 metres (16 feet 3 inches). The light comes from the north, but in sunny days it is far from being good, on account of the yellow reflections from the houses situate on the other side of the Boulevard, the fronts of which have a southern exposure. It is by means of an ingenious combination of white and blue shades that the artist succeeds in correcting this defective light, so as to obtain the charming effects so much admired in his productions. As may be seen in the drawing, these curtain screens, A, B, C, can be used separately simply by means of cords and pulleys. They move from the bottom to the top on the side sashes, and slide on the contrary from the top to the bottom on the upper sashes. When they are not in use they are gathered together as represented at D, E, F; besides these, other white curtains, G, can be moved in the ordinary manner from side to side. This, I repeat, is the only secret by which the eminent photographer can execute, in a gallery so unfavourable in many particulars, works which with justice are classed among the finest productions of photographic art. It may be said that he handles light as a painter does colour."

M. Lacan adds: "This establishment has remained, in all respects, the type of those galleries in which the first disciples of Niepce and Daguerre inaugurated their art, and made their reputations and their fortunes. Since 1852, Rentlinger has been obliged to enlarge his establishment in order to accommodate the great increase of his custom and his work. Experience has forced him to make numerous changes in his apparatus and his processes, but the appearance of the operating room in which he works, and of the reception-rooms to which the public are admitted, have suffered but very slight changes. When I enter his place it seems to me that all at once I become twenty years younger; it would be very desirable that all his sitters should experience physically the same effect."

We need not pursue the narrative into all the details of the store rooms, various working rooms, and reception rooms, where, in the last mentioned, we are told that "a

young lady, Rentlinger's beautiful daughter, who speaks several languages, receives the customers, and does the honours of these salons."

"The printing is done in the upper storey—that is to say, on the roof, which forms a terrace. There we find five hundred printing frames, which are constantly in use. Seven persons divide among them the careful work required in the operation of printing. The customers of Rentlinger are not composed of the ordinary public only who have their portraits taken, but it includes also the dealers in specialties and commission merchants, to whom he makes daily deliveries of the portraits of the celebrities of every description—actors and actresses, statesmen, artists, authors, queens of the *demi-monde*, &c., of which he is the publisher, and of which the trade requires a large number.

"Rentlinger employs twenty-eight persons, without counting the colourists and retouchers, who work in their rooms at home. These twenty-eight persons are thus divided: two at the desk, one for the salesroom, two in the waiting-room, three in the gallery, three in the laboratory, seven at retouching, three in the preparation of the paper, seven in the printing and mounting of the prints."

We may add, in conclusion, that M. Lacan's interesting details bring back vividly all the details we saw in a pleasant visit to this establishment which we briefly described some years ago.

#### HOW TO TREAT AND REALISE GOLD AND SILVER RESIDUES.

[M. L. G. KLEFFEL, of Berlin, who is known to our readers as a competent authority on photography, and who for some time conducted the periodical *Licht*, has favoured us with a seventh edition of his Handbook which is just published. We extract from it the article touching gold and silver residues, as the same is not only a very complete resumé of the subject, but cites the simplest and easiest methods, such as may be performed by photographers of ordinary ability.]

1. *Separation of chloride of silver from silver baths and washing waters which contain no hyposulphite of soda.*—It is a well-known fact that in the silver printing process only twenty-five parts out of every hundred of nitrate silver actually come into operation, and the remainder would inevitably be lost if one did not take the trouble to recover it from the residues. This circumstance, therefore, deserves the serious attention of every earnest photographer, more especially as the exercise of economy in the matter requires the expenditure of but very little trouble. All liquids which contain silver, whether old baths, solutions, or rinsings, with the exception of those which contain hyposulphite of soda, are put together in a glass or glazed vessel, and collected until such time as the quantity warrants the recovery of the same. To obtain the silver in the form of chloride, a mixture is prepared of one part pure muriatic acid and one part water, and this is added to the vessel of residue liquids until any tendency to become turbid has disappeared. To make quite sure, the liquid is stirred up with a glass rod, and allowed to stand until the surface has become clear, when further addition of acid will prove whether the disposition to become turbid is, or is not, present; more acid is, of course, added if turbidity ensues. After a few days the chloride of silver will have become deposited at the bottom of the vessel, and the clear portion of the liquid is then decanted off. Further quantities of the liquids are collected, and the chloride again thrown down, until at last there is a goodly mass at the bottom of the vessel.

The moist chloride of silver contains a good deal of acid, and this must be separated if the compound is required in a pure state. To do this, it is only necessary to wash it



in several changes of water until it fails any longer to redden blue litmus paper. When this result has been secured, the moist chloride of silver is put into an evaporating dish and heated, being well stirred the while, until no more moisture is given off. The chloride of silver is now in a state suitable for sale, exchange, or reduction.

The pulverizing of the chloride of silver is altogether unnecessary, and it is quite sufficient to break it into fragments of the size of beans or peas; neither need it be stored away from the light, for the circumstance of the compounds turning black has no effect upon the metallic silver. Chloride of silver is not soluble in water, but in ammonia, and a solution of hyposulphite of soda in water. During the drying of the compound, and in stirring, care should be taken not to breathe the vapour, as it produces a disagreeable feeling in the neck and nose. It is to the interest of the photographer that no impurity should enter into the chloride of silver, as otherwise the metallic silver afterwards produced has a lesser value, and consequently is not paid for so well. It is also a matter of importance not to allow any filter-paper to enter the residue vessel, for it is impossible to separate the same afterwards, and the buyer will make a serious reduction in the price he offers for the material. The purer and drier the chloride of silver, the higher the price it will fetch.

2. *Treatment of residues containing hyposulphite of soda.*—These liquids are collected in like manner. When a large quantity has been brought together, a solution of sulphide of potassium in water is prepared, added to the liquid, which is stirred, and, after standing some days, the upper portion of the liquid is poured off. The black mass at the bottom of the vessel is sulphide of silver; it is treated in the same way as the chloride, but is of less value. One hundred grammes of sulphide of potassium precipitate about double the quantity of sulphide of silver; but as the action of the sulphide of potassium cannot be watched, it is well not to add too little of it, so as to make certain that all the silver has been thrown down. It should, however, be remembered that, as a rule, there is but little silver in these liquids.

3. *Treatment of paper which comes into contact with silver.* When a quantity of cuttings, filters, and other bits of papers which contain silver have been collected, it is best not to sell the same in this form, but to reduce them to ashes, and then smelt the latter. The burning is best done by lighting a handful of the cuttings in an old iron pot, and keeping up the conflagration by adding the paper gradually until the whole stock has been consumed. An iron rod may be used for turning over the ashes, to see that they are perfectly burnt, and, when cold, they are rubbed down to make a denser mass. The paper from fixed prints contains a very small amount of silver; the ash from it is so light that it often flies away in the air, and is not worth the trouble of collecting.

4. *Reduction of chloride of silver and ashes.*—This operation can be undertaken in any good draught furnace or fire, but it is more convenient if you can get a smith to do it for you in his forge. When large quantities are treated, it will pay to have a small smelting furnace of one's own. The method I recommend is the one employed by most smelters in the trade; if the heat is sufficient, it gives up the silver in a pure state, and it is, moreover, very simple, and the cheapest that can be employed.

The smelting of chloride of silver and ash is undertaken in Hessian crucibles, which can be cheaply purchased of any dimensions. It is well to rub the interior with white chalk to prevent the silver, when molten, attaching itself in beads to the sides of the crucible. The best fluxing medium is powdered calcined soda. It is well mixed with the chloride of silver in equal proportions, the mixture filling three parts of the crucible; and before the latter is put into the furnace it must be thoroughly warmed, as otherwise it will fracture. Under the crucible is put, as a precautionary measure, a substratum of

Hessian clay, so that in case the crucible is broken the silver shall not be lost. A good fire is lit by means of wood; the crucible, with its clay stand, is put in and surrounded by coke; and the heating is hastened by the aid of a bellows. Care is taken from time to time to see that the heat is kept steady, coke being added as required. The glowing mass in the crucible begins at first to expand, rising to the edge of the crucible; if a boiling over of the mass is feared, a little common salt is thrown in, which has the effect of quieting the mass, and making it sink down again. The more intense the heat the more quickly will the mass fuse, and the temperature is maintained until no more bubbles appear, and the glowing white mass becomes quiet and liquid. A certain sign that the smelting is completed is when the surface is quite smooth, and moves to and fro. If stirred with an iron rod, the mass should drop off quickly when the rod is withdrawn; if it pulls out in strings, it is a sign that more heat is necessary.

When convinced that the process is at an end, the crucible is lifted from the furnace by means of a pair of tongs, put in a convenient place to cool, and finally broken to obtain the ingot. If it is desired to have the silver in some special shape, it is poured, while in a molten state, from the crucible into an iron mould, previously heated. If the mass has not been sufficiently heated in the furnace, a portion of it will be found remaining in the soda slag.

Eight parts by weight of good pure chloride of silver yield five parts of metallic silver; when operating with small quantities, and with extraordinary care, as much as three parts of metallic silver may be obtained from four parts of dry chloride; but in ordinary work, with large quantities, the first named proportions are very near the truth.

To smelt ashes only, it is necessary to add but one part of soda to three parts of ash; the two substances are intimately mixed, and the mixture pressed tightly into the crucible until the latter is quite full. No fear need be entertained of any boiling over in the operation, as there is not enough soda to do any harm. The smelting of paper ashes is a quicker operation than that of the chloride of silver.

If it is desired to smelt into one mass several small ingots or bars of silver, this is best done in a graphite crucible. A much lower temperature is needed for the purpose as is the case with chloride of silver. When the silver has been melted, it is well to throw into the crucible a spoonful of coarsely powdered charcoal, which has the effect of freeing the mass from any impurities that may be present.

5. *Smelting sulphide of silver.*—The proportion of soda to be added in this case is the same as with the chloride. It is necessary, however, to mix with the mass some iron filings, as otherwise the silver will never become separated. To one pound of sulphide of silver one ounce and a-half of filings is sufficient; the same should not, however, contain any brass or copper, but consist wholly of iron.

6. *Separation of gold from old baths and solutions.*—There are two ways of obtaining pure gold from old baths: either the liquids are evaporated to dryness, and the residue is melted in a crucible; or the gold is thrown down by adding sulphate of iron. The first method is not to be recommended, by reason of the time required for evaporating large quantities of liquid, and also because gold baths are, as a rule, so much exhausted that the result would be scarcely worth the trouble of working for, nor would the expense of the heating arrangements be covered. For this reason, I have confined myself to describing the second method, as being the more practicable.

When a large quantity of gold baths and solutions have been collected, the same being kept free from impurity, a solution is prepared of twelve parts of sulphate of iron in twenty-four parts of hot water; this is diluted with three times as much water, and filtered. The solution, after



filtering, must still be warm, or, if this is not the case, it is to be slightly heated. The waste gold liquid is also filtered, and is then poured, stirring the while with a glass rod, into the iron solution, when the latter at once assumes a turbid, dark-brown colour. When the gold solution has all been acted upon, the vessel is allowed to stand quietly for from twelve to twenty-four hours, and a brown precipitate will then be found, consisting of gold.

In order to test whether sufficient sulphate of iron has been employed to precipitate all the gold, some of the clear brown liquid at the top of the vessel is put into a test-tube and warmed over a spirit lamp, together with a few drops of the iron solution. If it remain clear, all the gold has been thrown down; but if it become turbid on the addition of the iron, then a further supply of this, in a warm state, must be added to the residue.

When the gold has been all precipitated, and the liquid become transparent, the latter is carefully poured off. To the residue is added a few drachms of pure hydrochloric acid, and the vessel containing it shaken; then water is added, and the contents allowed to remain for some hours, after which the water is poured off again. This washing is continued until the water pours off quite free from acid, or, in other words, until it fails to impart a pink tint to blue litmus paper. When this has been satisfactorily accomplished, all the water is poured off, and the residue is dried by putting it upon a sandbath or warm oven. The precipitate thus obtained is collected by means of a glass spatula, and may be considered as pure metallic gold. It presents a cinnamon-brown tint, and, if pressed lightly with the finger nail, assumes a metallic lustre.

## Correspondence.

### THE PHOTOGRAPHIC SOCIETY.

SIR,—Will you allow me to state that the communication in the columns of your contemporary, dated from Brussels, was not written by me, and that I do not know any gentleman of the same name resident in this city. As my name is so well known all over the world, and the weight attached to my opinions on such a subject as the position and character of the Photographic Society of London so overwhelming, I feel it the more important to ask you to publish this denial—especially as I do not endorse the opinions of the writer of the letter in question, who appears to be a person “wise in his own conceit;” and your readers know Solomon says “there is more hope of a fool than of him.” My only aim is, however, to assure you that the minute interest in the proceedings of the society is not confined to Brussels. In the last letter I received from Moscow just the same keen concern in the convulsions of your little society was manifested, and I have reason to believe that the proceedings of the conspirators are as eagerly watched in Timbuctoo as they are in Brussels.—Your obedient servant,

W. J. ONSLOW.

Rue de Namur, Brussels.

## Talk in the Studio.

OBITUARY.—The name of one of the gallant gentlemen who fell at the battle of Amoaful, Captain Buckle, was well-known to photographers. He was the son of one of the earliest photographers, whose name descends to the present generation of workers by their knowledge of his useful little contrivance, “Buckle’s brush.”

PHOTOGRAPHIC SOCIETY OF LONDON.—Mr. G. Hooper asks us to announce that at the meeting of the Photographic Society to be held on Tuesday evening, he will move that the president, vice-presidents, treasurer, council, and secretary be requested to resume office for the present year. The aim of his motion is to secure a state of settled and trusted management during the changes in the laws of the society, after which a new council may be elected under the new regime. He earnestly wishes all members interested in the welfare of the society to attend and vote for his motion.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—At the next meeting of this society, which will be held at the Rooms of the Society of Arts, John Street, Adelphi, on Thursday, March 12th, Mr. S. Fry will read a paper “On Studios,” illustrated by a model.

PHOTOGRAPHY AND THE TELEGRAPH.—Instantaneous photography has been proposed for registering the deflections of a new and very delicate electric telegraph, which is described in the *Times*. The indicator is described as consisting of a strip of gold leaf, which is deflected either to the right or to the left according as a positive or negative current is sent through it, and that these vibrations of the leaf, being magnified, are read off by the operator. Mr. Highton states that the deflections of the leaf might be recorded by instantaneous photography. We presume that some of the rapid dry films which are now available might be used in conjunction with this instrument.

HANDY WEIGHTS AND MEASURES.—We learn from the *Journal of the Society of Arts* that the bronze Victoria penny is precisely one-third of an ounce in weight, and as this weight is the postal unit for continental letters, the penny will be found a convenient weight. It is also stated that a bronze halfpenny is exactly an inch broad, and therefore gives us a very convenient measure. Laid on an Ordnance map of the inch scale the halfpenny covers just 500 acres.

CAPTAIN ABNEY’S INSTRUCTION BOOK.—In an able review of the excellent manual recently issued by Captain Abney, the *Derbyshire Advertiser* says:—“Under the unassuming title of ‘Instruction in Photography,’ Captain Abney, of the Royal Engineers, the eldest son of our respected townsman the Rev. Prebendary E. H. Abney, vicar of St. Alkmund’s, Derby, and rural dean, has produced a work which, for perspicuity of style and excellence of arrangement in its special application, has not yet been surpassed, at all events in so small a compass. Nor is it by any means confined to the mere rudiments of the art. On the contrary, it treats most learnedly and cogently of the theory of it, and testifies to the profound acquaintance with the subject possessed by the author. At an age when so many young men are wondering what is to be done with a plentiful crop of wild oats which they have on hand, Captain Abney, by dint of hard work and assiduous study of his profession, finds himself in the important position of Instructor in Photography at the Military Engineering School at Chatham. And in order that our readers may form some idea what instruction to the Royal Engineers means, and what manner of man their instructor must be, we will give them a short abstract of the book. It means that he must know thoroughly the theory and application of modern photography as practised in the studio and the field; the various ‘dry processes,’ as they are called, of which some five or six are given, and by means of which you may, if you like, go out for a fortnight’s tour, expose your plates, and come home and develop them quietly at your leisure; the calotype process, in which paper takes the place of glass as the negative; the carbon process, which gives you a perfectly indestructible print which you may hang up amongst your penates in the pleasing assurance that it not will fade away before your eyes in twelve months’ time; the photo-lithographic, photo-zincographic, and heliotype processes, together with silver printing, and other special applications of photography too numerous to mention.”

## To Correspondents.

W. J. STILLMAN writes to say that Mr. Thomas withdrew from the committee for the revision of the laws of the Photographic Society under circumstances which he thinks were very amusing. He adds:—“He accepted a place on the committee, and when we met he offered his real co-operation only on the condition that we should do nothing! Having been deputed by the society for a definite duty, and having accepted the duty, we were required, as the condition of Mr. Thomas’s assistance, that we should agree to disperse without action, after the manner of the farmer’s boys, of whom one was doing nothing and the other helping him.” Mr. Stillman proceeds to stigmatize this course as “ridiculous” and “incomprehensible.” Without begrudging our correspondent the odd form of amusement he sees in such a matter, or discussing his estimate of Mr. Thomas’s conduct, we must point out that he is in error in regard to his facts. In the first place, Mr. Thomas did not, as his letter explains, wish the committee to “do nothing,” but that, before proceeding to the alteration of rules, they should communicate with all the members of the society to ascertain their views on the present crisis. Pursuing such a wise and honourable course Mr. Stillman regards as “doing nothing.” In the next place, we may remind Mr. Stillman that the committee to which he refers was really appointed by the requisitionists, and it was to secure the views and instructions of the whole society that Mr. Thomas desired a specific course to be taken. Mr. Stillman proceeds to admit that amongst those engaged in the agitation there is an



absence of harmony or unanimity. He says:—"I differ in several important points from the majority of the requisitionists, but as, in all such cases, union is necessary to victory, I waived my own minor opinions for the sake of union." This is candid; but how far such a victory will gratify the members of the society at large is scarcely a doubtful matter. Mr. Stillman says that "Commander Turton's letter seems to strain the point of fault-finding, for the sake of finding fault." "What," he asks, "have we or the new council to do with his not receiving a balloting paper, which should have been sent by the late secretary? Really he is like the wolf in the fable, and wants to gobble us up for the faults of our ancestors." Captain Turton neither says nor implies that his non-receipt of a voting paper was due to the new council, nor is his allusion to the voting paper the chief purport of his letter. That is a preliminary reference to a neglect or mis-carriage in connection with the late executive. His chief aim, besides condemning the "factious and discreditable" conduct of the requisitionists, is to suggest united action to the whole of the members to depose the self-elected officers as a preliminary to any revision of the laws. Finally, Mr. Stillman recommends Captain Turton to wait. "If he is not satisfied with the assurances in behalf of country members, he had better wait and see what the committee of revision has to say, and then find fault, if he has any fault to find; at present, all that sort of thing is premature." Now this really is "amusing." Captain Turton and other country members are to wait until the requisitionists have settled everything past praying for, and then find fault!—when, of course, the reply will be, "Spoke too late: all is settled now." Why country members, whose rights and claims are in every respect equal to those of town members, should be told to wait, and they shall have attention by-and-bye, is certainly incomprehensible. The new rules not only ignore them, but actually prohibit them from taking part in the appointment of officers, and, on the hope these rules afford, country members are requested to wait in patience and faith!

S. M.—There is no work published on the subject you name, merely an allusion in an article or paper. The plan referred to consists in placing a plate of ground glass in the camera between the lens and sensitive plate, in order, in some slight degree, to modify and destroy the perfection of focus. It is not, we think, the best mode of securing the desired result. One of the best methods consists in the use of a plan similar to that we have described as employed in Jacobi's printing frame. Removing the stop during exposure, and giving half the time with the full aperture of the lens, is also easy and effective.

G. AUTOL.—You will find an article in our last volume, on page 403 (August 22), on the subject of producing large negatives, giving the various precautions necessary at much greater length than we can give them in this column. The collodion should be highly alcoholic, and may have water carefully added. A horny, repellent collodion should be carefully avoided. An iron developer, not too strong, should be used.

A BEGINNER.—You do not state whether you wish to commence with negatives or positives. We will assume the latter. Make your bath of the strength of forty grains of nitrate of silver to each ounce of water, and add two drops of nitric acid to ten ounces of the solution. Before adding this acid, however, add one grain of iodide of potassium to each ten ounces, and, if you can secure a few hours of sunshine, expose the bath to it, then filter, and add the acid. For developer, use fifteen grains of protosulphate of iron, two drops of nitric acid, and fifteen drops of acetic acid in an ounce of water. Fix with cyanide ten grains in an ounce of water, using the solution over and over. You will find the little work, "Photography in Four Lessons," published by Mr. Solomon, very useful.

CARELESS.—You should have stated the nature and extent of the crack. It may be difficult or impossible to prevent leakage; it may be easy. Shellac varnish, made by dissolving shellac in wood naphtha, run into the crack, may answer. Marine glue, skilfully applied to the crack, may answer well.

B. J. S. H.—The orange coloured solution of bichromate will answer well for a dark-room window. We see no reason for substituting any other acid for the dilute sulphuric acid.

H. T. REED.—We do not advocate long washing or long soaking, which does not necessarily mean perfect washing. Frequent changes of water, and thorough draining between each—or, better still after two or three rapid changes, placing all the prints in an even heap—and submitting them to severe pressure, and again washing a few times, will be found more efficient than long soaking. The loss of brilliancy to which you refer, after long soaking, simply illustrates the result of many hours' action of a very dilute hypo bath, for each washing water gradually acquires that character so long as there is a trace of hypo left in the print.

A SUBSCRIBER.—It is difficult, and scarcely safe, to transfer a varnished negative, as its adhesion to the glass is generally very firm. You may try applying a solution of gelatine, which in some cases will, on drying, lift away even a varnished film.

G. H. BURTON.—We added the address and posted the letter.

J. H. W.—The ordinary liq. amm. fort. of commerce we understand. 2. We have heard no further report or details of trials of the process to which you refer.

EXHIBITOR.—It is legitimate to send to an exhibition an enlargement made for you from one of your own negatives; but it will be honourable to give the name of the enlargers as well as your own.

MACAULEY.—You do not state from what kind of clothing you wish to remove the silver stains—whether from woollen or linen, white or coloured, fabrics. From linen or other washable fabric it is not difficult to remove the stains. From any kind of coloured clothing it is difficult to remove such stains without removing the colour as well. Apply solution of iodine, either made by dissolving iodine in alcohol, or by dissolving iodine in an aqueous solution of iodide of potassium. Then apply cyanide of potassium.

AUSTRALIA.—We regret that we cannot suggest any one likely to undertake the business duties you suggest; but we think you would be safe in giving commissions to most respectable dealers. We do not know anything of the method referred to in the paragraph you enclose, but think, had all its statements been authentic, more would have been heard of the matter. 2. Shellac, when dissolved in spirit, is often turbid at first, and requires some time for subsidence. Shellac is a compound body, and some portions of it, being insoluble, remain in suspension, gradually subsiding. The turbidity is not due to the castor oil, which is soluble in alcohol. 3. The application of iodine to a negative changes the colour to an olive green. It need not be changed right through, and care should be taken not to go too far, as it gradually may produce a light canary yellow, which is not non-actinic. 4. The bronze powder used in printing some cards has been ascertained to have an injurious action on prints, and is a frequent cause of yellow spots. 5. We are uncertain at what rate lantern slides can be sent by post. The dealer will doubtless do the best of whom you may order them. 6. We are not familiar with those of Messrs. Pumphrey Bros.

J. A. (Ikeston).—The C lens is more rapid than the other, and would, we think, suit your studio. 2. The No. 2 will give you better results than No. 1. 3. The A is not so suitable as B for cards. 4. We do not know the whole-plate you name, but fancy that the other you have will answer best.

A. J. COOK.—As a rule we are not at liberty to give the name and address of any correspondent who writes under his initials only. The gentleman you name is a medical man. If you wish to consult him professionally, send us a stamped and addressed envelope, and we will forward you his name and address.

G. BRUCE.—Thanks. Possibly some means may yet be devised of enabling the country members to use their weight in averting the mischief which the agitation you so properly denounce has brought about.

F. C. EARL.—Thanks. We shall certainly try another year if such an arrangement as that you propose can possibly be brought about. We can see the desirability, but fear it is too late this year to do any good in the matter. Regarding the society, it is difficult to say what will be the issue. The "appeal to the country" appears on all hands to be regarded as the legitimate resource. We understand that a motion will be made at the meeting on Tuesday to invite back the officers to take charge of the society during the year, whilst changes and revision in the laws are made, and a fuller means of securing the influence of country members is provided. Whether such an unanimous vote will be secured, and whether, if secured, the result desired would follow, remains to be seen.

R. W. ALDRIDGE.—Thanks.

A NON-RESIDENT MEMBER writes an indignant letter to ask by "what right Mr. Sawyer, or any body of requisitionists, decide that the claims of country members should be postponed until the important 'questions affecting metropolitan members only' be disposed of?" He adds: "This insolent avowal, more than any other argument, shows the self-seeking aims of these men. The privileges of country members have been slight enough; one of the chief having been in the mere fact of membership in a society containing so many distinguished photographers. If that society be given over to the control of restless men, the majority of whose names are quite unknown to country members, men who coolly avow that their first aim was to secure their own objects, and pass rules which snub country members, the sooner country members resign the support of the society, as well as its management, to metropolitan members, the better." The comments on the members of council acting with the requisitionists are more severe than just, and our correspondent, on reflection, will be better pleased that we do not publish them.

W. H. WATSON.—Received; thanks.

L. G. KLEFFEL.—Many thanks. We have pleasure in publishing your remarks.

Several Correspondents in our next.



## The Photographic News, March 13, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### THE TRANSIT OF VENUS—TRANSPARENT PAPER.

*The Transit of Venus.*—The photographic arrangements connected with the transit of Venus operations to be conducted by Government are now almost complete. Although the phenomenon, to which every astronomer is now looking forward, will not be visible until the month of December next, still, as all the stations at which observers will be placed are at a great distance from this country, the necessity for immediate action in the matter is obvious. It seems pretty well settled that a dry process will be employed on the occasion, and that the beer dry process of Captain Abney, R.E., will be the one chosen. This officer has, indeed, been entrusted with the entire direction of the photographic work on the occasion in question, and we may heartily congratulate ourselves that the choice has fallen upon so efficient and eminent a photographer. No better selection could possibly have been made, for Captain Abney is not only a scientific and practical master of the art, but he is one well-skilled in the teaching of others. A school of instruction has been improvised at Greenwich, and here manipulations necessary in carrying on the operations, drilling in the movements, &c., are practised.

Fifteen Sappers are being instructed to become efficient photographers, to act as assistants to the five chiefs selected for the five different stations. Captain Abney, as the senior officer, has had the choice of stations, and has selected Alexandria, whither he will be accompanied by three of the Engineers. Lieut. Darwin, R.E., who is now in charge of the school at Greenwich, and who has been permanently attached to the Royal Naval College at Greenwich, will proceed to New Zealand in charge of the photographic work to be undertaken there, and will also be accompanied by three assistants. The third station will be on the Sandwich Islands, where the photographic arrangements will be under the direction of Lieut. Ramsden, R.N. The fourth station is in Kerguelen's Land, a rather out-of-the-way place, apparently, for it is described, rather indefinitely, as about two hundred miles south and east of the Cape of Good Hope. Father Perry will have command of this station, with Mr. Smith in charge of photography. The fifth station is Rodrigues, near the Mauritius, but no photographer has yet been appointed to this post of observation. The Indian Government will most likely send a party to a point at the extreme north of India, but with this station we at home have nothing to do. It is obvious that with stations so far away as these there is no time to be lost in making preparations; for in some cases a period of not less than six months must be allowed for the journey to the islands in the Southern Ocean. In the case of the Sandwich Islands and Kerguelen's Land, it will be necessary, in all probability, to take out, besides the scientific instruments, every necessary of life that may be required, for the actual locality of the station on the islands has not been determined on, and there will be, probably, nothing more hospitable than bare rocks and shingly beach to be found. As regards the preparations being made by Germany, we know that Dr. Kroebe, the president of the Dresden Photographic Society, has been ordered to proceed to the Auckland Islands, South of New Zealand, in June next, to obtain photographic records in that locality; while Professor Vogel, the president of the Berlin Society, will proceed to Japan. Both these gentlemen are well known to us through the medium of the photographic journals, and there are certainly no better men in the Fatherland who could have been selected for the delicate and arduous duty. So far as France is concerned, all we know at present is that M. Fizeau, a name known and honoured by all photographers, has been deputed by the French Government to undertake the instruction of those who will be entrusted with the photographic operations, and a school

for the purpose is now being constructed in the Luxemburg Gardens. It is considered that operations to be undertaken at such a distance require men more youthful than the French veteran photographer we have just named; but it is satisfactory to know that he will give his pupils the benefit of his experience, if he does not personally take part in the expedition itself. M. Janssen will doubtless have supreme charge of all scientific parties sent out from France. The station in Northern India, although nothing as yet is definitely fixed, will, no doubt, be under the charge—so far, at any rate, as the photographing is concerned—of Captain James Waterhouse, the Assistant Surveyor-General of India, who, as our readers know, is well fitted for the post, and who on a recent occasion proved himself to be a most accomplished astronomical photographer. One other ardent disciple of the camera remains to be mentioned, who has already undertaken most successful photo-astronomical work, and who intends once more to make independent observations of his own on the approaching important occasion: we mean Lord Lindsay. This distinguished amateur has elaborated a very complete arrangement for taking pictures in rapid succession of the phenomenon, and has spared neither time nor expense in securing efficient instruments. We may rest assured, therefore, that with such able and skilful masters of photography as we have mentioned, some highly valuable and trustworthy records will be secured of the transit of Venus across the sun's disc on the memorable 6th December, 1874.

*Transparent Paper.*—A good method of producing transparent or translucent paper is well worth knowing, because impregnating paper with wax or paraffin is at times not only inconvenient, but difficult to manage, if a large surface is to be uniformly treated. By mixing together three or four parts of absolute alcohol with one part of castor oil, a homogeneous mass is produced, which, when applied to the surface of paper by means of a brush, renders the same perfectly transparent. The operation is performed in a very few minutes, and the translucent character of the material is such that it can be printed through by photographic means very readily. Engravings, diagrams, drawings, sketches, and, indeed, any design executed on paper, may be thus transformed into a transparency, and if good paper has been employed of uniform texture and thickness, the result of printing by photography will be perfect. Of course, if the drawing is upon white paper, the copy will be in white lines upon a black ground, and this, although it would be quite sufficient for engineers and draughtsmen in order to keep fac-similes of their work, would not be always satisfactory. By treating the first copy again as a cliché, however, copies may be produced in their right sense, and in any number, the only apparatus required for the purpose being a printing-frame and a couple of baths. But the great advantage of this mode of producing transparencies lies in the fact that the castor oil may be removed from the paper at any moment by simply washing the transparency in alcohol; the oil is at once dissolved out, and the engraving or drawing so treated is restored to its pristine condition. No trace of oil or grease remains in or upon the paper.

#### FRENCH CORRESPONDENCE.

PHOTOGRAPHERS in Paris are still experimenting with the acceleration brought about by a preliminary exposure of sensitive plates or sensitive paper to light. At the meeting of the French Photographic Society held on the 6th March last, M. Ferrier gave an account of a very interesting experiment which he had made on the subject. He tried a process recently published, which consists in dividing the time of exposure into two periods, and commencing the exposure by furnishing the lens with a diaphragm, which is subsequently withdrawn. The author of this communication stated that such a proceeding reduced the actual pose of the object by one-half. M



Ferrier chose a landscape view for the purpose of trying the plan, and after having focussed and placed the prepared plate in the camera he uncovered the lens, which was furnished with a diaphragm having an opening of five millimetres. After twenty-five seconds had elapsed he withdrew the diaphragm, and continued the exposure with an opening of two centimetres for a second period of twenty-five seconds. The cliché resulting came up well on development. Immediately afterwards he produced another plate in the ordinary way with a large opening (two centimetres), and gave an exposure of one hundred seconds. This exposure, which was double as long, gave a result identical with the former one. The experiment repeated several times proved abundantly that by these means it was possible to diminish the exposure by one-half. Only in practice, no doubt, it would be preferable to employ, instead, one of the plans indicated by MM. Melchion, Franck de Villecholle, or Liebert, because the changing of the diaphragm during the operation of photographing may lead one to displace the apparatus; or, when it is a question of securing a portrait, the model may be disturbed by the movements made during the critical period of exposure. In one case or the other, one runs the risk of spoiling the result.

M. Fleury Hermagis exhibited to the society, at the last meeting, some new aplanatic lenses (of flint with a basis of minium chemically pure), which possess the most advantageous properties, to judge from the specimens which accompany M. Hermagis' note. They were views of monuments taken in Spain, and reproduced on a very large scale, the architectural lines without any distortion, and groups composed of a large number of people, executed by M. Boissonnas, of Geneva; seascapes, race horses, and troops on the march obtained instantaneously by M. Carlos Relvas, the skilful Portuguese artist. These were all much admired, especially a group of two magnificent cats, a greyhound, and several pigeons, who seemed to have given up their natural mobility of character in order to conform to the exigencies of photography. I consider it my duty to advise my English readers regarding these lenses, which have, besides, one more advantage, that of being of a moderate price.

M. Hermagis also presented the society with a varied collection of photo-lithographs and divers specimens of his process of engraving upon wood and metal, of a powder process upon enamel and porcelain, oil painting, &c.

M. Geymet submitted a volume indicative of the progress made with his mechanical printing process; it was a facsimile of a manuscript illustrated with sketches in pen-and-ink, the reproduction of which by any other means would have been very costly. By his photo-lithographic process he has been enabled to produce copies of the work at the price of fifty centimes a copy. This is a most important fact, considered from a publisher's point of view, as illustrated works may in this way be easily multiplied.

M. Geymet also exhibited a numerous collection of pictures, of cabinet size, printed by the aid of fatty ink, the fineness, modelling, tone, and general aspect of which were in every respect those of fine silver prints.

I will not do more than make mention of an apparatus designed by M. Champion for measuring the duration of exposure of instantaneous pictures, so to speak. The idea involved is an ingenious one. There is a kind of electric telegraph attached to the cap of the lens, which marks, with lines more or less long, the time during which the lens remains uncovered. It may be asked whether such an apparatus is of any practical value; for in taking instantaneous pictures it is a question rather of exposing as rapidly as possible than to know the actual duration of the pose. If, however, it may be of little service to photographers at large, this invention may nevertheless be made use of in particular instances, where a given time of exposure is necessary in the solution of a scientific problem.

Professor Stebbing, whose name is well known in France by all those who work the dry collodion process, having made quite a reputation through the excellence of the plates which he prepares, has communicated to me a method of a most simple and radical nature to get rid of the stains which are found too often upon negatives after printing for some time with silver paper. To make them disappear, it is sufficient, he assures me, to plunge the negative in a bath containing fifty per cent. of ammonia, and to rub the film lightly with a tuft of cotton wool, in those places which have been attacked, until the yellow stains disappear. This remedy is an infallible one, adds my correspondent.

It is now eighteen months since M. Fargier forwarded to the French Photographic Society a collection of prints obtained by carbon printing by means of a very simple process. I need merely say that he prepared a saline solution, which was placed in a porcelain dish, and upon this he floated a sheet of ordinary paper. This paper was then removed, dried, and placed in the frame under a negative. The image came up by degrees, and its progress could be well watched. When the exposure seemed to him sufficient, he floated the picture upon a bath of gelatine coloured with pigment, such as is employed in the preparation of carbon tissue. The gelatine fixed itself only to the portions of the sheet which had been impressed by light. He then washed in warm water, and the operation was finished.

To-day M. Fargier has completed this first communication by giving us the formula of the saline solution, which he had hitherto kept a secret. The liquid is thus constituted:—

Perchloride of iron ...	...	...	5 grammes
Citric acid ...	...	...	5 "
Water ...	...	...	100 "

The coloured gelatine mixture contains one drop of bichromate for every cubic centimetre of mixture.

Here again is the reverse of the process:—

Upon a bath of bichromate M. Fargier floats a sheet of ordinary albumenized paper, the albumen surface uppermost. After eight or ten minutes the albumen assumes a yellowish colour, and the sheet is dried in the dark. It is exposed under a negative or under a positive transparency, and the image produced is then floated upon a bath of gum coloured with some pigment to which a trace of protosulphate of iron has been added, and immediately afterwards the impression is washed in water.

The result is an imprint of the cliché or the transparent positive in all its details.

ERNEST LACAN.

#### AMERICAN CORRESPONDENCE.

VENTILATING THE DARK ROOM—HOW TO MAKE A "WONDER CAMERA"—THE PHOTOGRAPHER AND THE COLOURIST—HOW TO GROW AND IMPROVE.

*Ventilating the Dark Room.*—There are some things which must be continually pounded into people, lest they forget them, and very often this is the case in matters most essential to the health. One of these, and not the least important, is the subject of ventilation. Every time I go into a dark room and see the pale face of the manipulator I feel that I should do something more to induce photographers to take care of their health; and although it does seem as if it is with photographers like I was told in Dublin is the case with the Irish donkeys—"they never die" of the work they have to do—yet, without wishing to perpetuate a libernicism, I believe they would live longer if their work rooms were better ventilated. And while calling attention to the subject, I will give you a method of accomplishing the object named, which has been given me by Mr. R. J. Chute, as follows:—

"This question of ventilation is one that has puzzled so many much wiser heads than mine, that I am not over-sanguine in any recommendations I may make. A small room, however, such as



most of us use for the chemical operations connected with the making of negatives in the gallery, presents no such difficulties as the ventilation of the English Houses of Parliament, or the Halls of Congress at Washington, yet it is of no less importance to the occupant, and the best possible means that can be devised should be adopted to give every dark-room a thorough ventilation. It requires no elaborate system. The operations of natural laws in reference to the movements of currents of air are very simple, and it is only necessary that these should be observed to secure the desired result. It is well known that cold air is heavier than warm; also, most of the foul vapours and impure gases fall and mingle with the cold air, while the warm rarefied air rises. It is well known, also, that heat is one of the best of disinfectants.

"Now we have only to conform to these operations of natural laws to secure the end we desire.

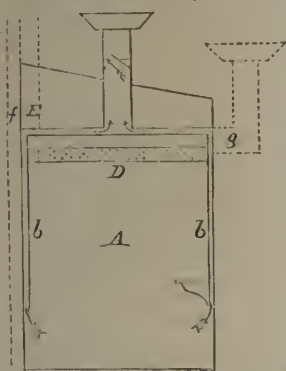


Fig. 1.

on the wall, and a supposed flue, *f*, against which it is placed. The sheathing of the ventilator on the ceiling should be of *thin* material (a thin board sheathing, painted black, would be a good conductor of heat), so that the advantage of its broad surface may be gained by its being readily warmed by the heat of the room, and which will tend to give an upward current at all times. The diagram, Fig. 1, supposes the dark-room to be near the roof, as represented

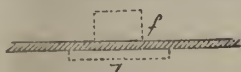


Fig. 2.

at *C*. Should there be a flue or funnel at one side, as at *f*, then the ventilator, instead of passing out at the centre, might pass out as at *E*. But should the room be so situated that there could be no outlet through the ceiling, then place the ventilator as represented by the dotted lines at *g*. The fresh air supply is from the perforated pipe *D*, which should run on two or three sides of the room, and have a damper, to open or close, near the outer end. If connected with the outer air, which would probably be best, a fine wire gauze should be placed over the mouth. The perforations should be made so as to throw the air out horizontally into the room. The advantage of placing the supply-pipe at the top of the room will, I think, be readily seen. The cool air, as it enters the room from two or three sides, will immediately fall and cause a change in the air throughout the room; whereas, if the air were admitted at the bottom, or an open door or window depended upon for a supply, it would pass immediately into the ventilators, and the air in the upper part of the room scarcely be disturbed at all. Moreover, this arrangement will, I think, secure immunity from dust in a great measure. Though dust is sometimes raised, yet, if left to itself, it naturally falls, and with this arrangement it will be assisted in falling. Contrary to the system of ventilating at the top, which always tends to keep the dust whirling, this method carries it down, and keeps it there, or takes it off through the ventilator. The advantage of a perforated supply-pipe is that the air is not allowed to rush in with force in a great volume, which is sure to carry dust with it if there be any to be found, but



Fig. 3.

it must enter slowly, and be distributed over considerable surface; this neutralizes the force, and diffuses it throughout the room just as it is needed. Fig. 3 is a section of ventilator showing an interior automatic valve, which is intended to prevent a downward current. On one side of the pipe a piece is put in on an angle, filling about one-third of the opening, and on the upper edge of this the valve is hung. It is so constructed with a double thickness on the narrow side that its own weight will keep it open, but the least current of air coming down will close it. Care should be taken in hanging this valve to have it work perfectly free, for on this will its utility depend. The top of

the ventilator may be protected by a hood, as shown in the diagram, or any of the improved ventilators in common use might work well. In reasoning on this plan, it might be suggested that the currents of air will not move as desired—that is, the supply-pipe will be as likely to prove a means of egress as ingress; that the air, becoming warm at the top of the room, will escape through this pipe, and keep up an *outward* current instead of an inward one. This may prove true when a door or window is open, so that a pressure of air comes in from below, and then it will certainly do no harm if heated air escapes in that way; but when the room is closed, and the heavy air is drawn off from the lower part of the room by the ventilators, the pressure on the heated air above is removed, and the sort of vacuum there formed by the air, becoming continually rarefied by heat, will cause a constant rushing in of fresh air to supply it. This fresh supply falls, and takes the place of that being carried off—and so a continual circulation is kept up, giving a fresh and healthful atmosphere."

*How to Make a "Wonder Camera."*—A "wonder camera," as you undoubtedly know, is a sort of magic lantern so contrived as to enable one to use opaque objects for projection upon the screen instead of glass transparencies. For example, if a photographer wishes to show his customer how an enlargement from a carte will look, he simply has to put the carte in the "wonder camera" and "throw it up." Many enlargement sales may be made in this way. Any photographer may make a "wonder camera" for himself, and what follows will tell him how—a plan given me by Mr. T. Carter. He says:—

"After experiment I have succeeded in making the above instrument in a very simple manner. It consists of a wooden box with a top made of tin or sheet-iron; the chimney is made of the same material. The lens is the same as used upon a camera for making photographs. At the back of the box (as will be seen by reference to the plan and elevation) are two doors placed upon

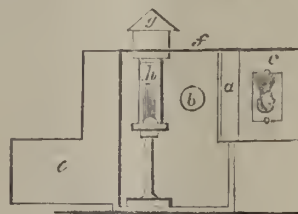


Fig. 1.

hinges. When the box is in use the door *e* is kept closed. The other door consists of two parts placed at right angles to one another; the object of this is to fill the opening in the door *e* while the pictures are being attached to *c*; when *c* is swung into position opposite the lens placed at *b*, *d* is carried to one side. If stereoscopic views are to be shown, a slit may be cut at *e*, through which they may be inserted without opening the box. The

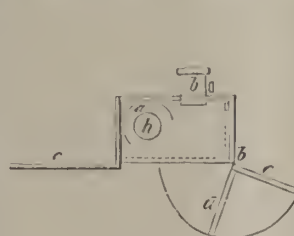


Fig. 2.

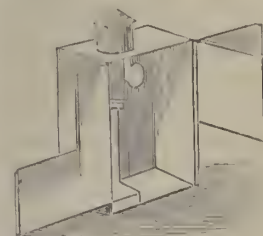


Fig. 3.

door *e* should be cut off a little at the bottom so as to admit air. The light is placed at *h*, as nearly opposite the picture as possible. It should be a strong light; an argand burner is the best. At the back of the light is a piece of tin bent into the form of a reflector. The light coming from *h* strikes *c*, and is reflected through the lens upon the screen. The plan of the box is represented with the top removed. I have given no dimensions, as they will depend upon the focal distance of the lens and height of the light. Care must be used to have the distance from the lens to *c*, when closed, equal to the focal distance."

(To be continued.)

## THE NEGATIVE BATH.

BY R. J. CHUTE.\*

Water	...	...	...	15 ounces
Nitrate of silver	...	...	...	1 ounce
Iodide of potassium	...	...	...	2 grains

THIS or a similar formula may be found in every work on photography, and is often reiterated in the journals; but as the nitrate bath is unlike most other chemical preparations we use, in that it is used indefinitely, it is a matter of the first importance that it should be kept in working condition after it is made. In order to do this it is necessary to know when it is in good order and when it is not; if it does not work well, to know what the difficulty is and how to apply the remedy.

If a bath fails to produce good work after it has been doing well, there is, of course, a cause for it. There may be said to be regular and irregular causes. The regular causes are those that come from the usual routine of work, and are exhaustion, becoming charged with ether and alcohol, dust and collodion films from the plates, and organic matter that dissolves and becomes a part of the solution. The first of these—exhaustion—produces pinholes, by the strength becoming reduced, leaving a hole of silver in excess, which is deposited in fine crystals on the surface of the plate. The remedy for this is to filter and strengthen. The second—ether and alcohol in the bath—causes lines and markings in the direction that the plate stands in the camera, from the drying of the plate by the evaporation of the alcohol held in the solution. The remedy for this is to boil the bath partly away till the ether and alcohol are expelled. The third—dust and collodion films—may be avoided, in a great measure, by being careful to keep the plates well protected after being cleaned, dusted before coating, and then wiping carefully from the edges of the plate the heavy ridges of collodion that collect as it drains, and which, if left, often become loosened and break off in the bath. These may be avoided by a pin in the dipper, so that the plate shall not go to the bottom; or it may be kept well in motion during the coating. The sure remedy, however, is to filter.

The fourth cause, organic matter in solution, comes mostly from the plates, though any particles of soluble matter that fall into the bath are taken up. A fruitful cause, probably, is albumen from the glass. To avoid this care should be taken, in albumenizing, to prevent the albumen getting on the back of the plate; and also, in coating, to cover the surface as completely as possible, so that no albumen is exposed. The result of this condition of the bath is fog, streaks, and opaque spots. These may be removed by adding nitric acid, but the remedy is not very permanent, and it may be necessary to repeat the dose in a day or two; besides, the deposit in the negative, when developed, seems to be made up so largely of soluble matter, that, after fixing, the shadows and dark drapery will be almost destitute of detail or relief. The most effectual remedy for this trouble is to neutralize the bath and boil it. It may be neutralized with ammonia, bicarbonate of soda, cyanide of potassium, or permanganate of potash. The first two of these are preferable, if the bath is in any way decidedly acid. The two last have rather a cleansing influence, and may often be used with success. The bath should not only be made neutral, but slightly alkaline. In this condition, when heat is applied, the foul matter is liberated, and falls to the bottom in a black mass. In renovating a bath in this way it should be filtered, after boiling, while it is yet warm. If allowed to cool, much of the matter thrown down may be redissolved, and the benefit of the operation in a measure lost. After filtering, it may be diluted with pure water to the proper strength, and pure nitric acid added till it shows a rather decided re-action on blue litmus-paper. The effect of the acid on the working condition of the bath cannot be de-

finately ascertained until two or three hours after the addition of the acid.

With care to exclude as far as possible all extraneous matters, and avoid unnecessary doctoring, the treatment I have described will keep a bath in good condition indefinitely.

The practice of precipitating the iodide from a bath whenever it shows any signs of failure, no matter what the cause, is one that cannot be too strongly condemned. The only iodide I ever disturb is what little is precipitated, by adding to it a few ounces of pure water that has rinsed the bath-dish after drawing it off. This I do not filter out, but let it remain and be taken up again, if it will, when the bath is strengthened by boiling. In making up a bath after boiling it should be given its full bulk, filter, and add a few grains of silver, if any signs of milkiness appear, and it will come out bright and clear as crystal.

The irregular causes of failure are those that do not arise as the result of ordinary work, or that come from applying the wrong remedy in case of some trivial derangement. A common remedy with inexperienced operators for all sorts of difficulties is acid. Now acid is only beneficial in cases of an alkaline reaction, or such as I have already mentioned. Another irregular cause is getting the bath too strong; it will produce spots, streaks, and hard, coarse negatives. Dilute and filter, and the trouble will disappear. Another cause is quite sure to make its appearance on the approach of cold weather, unless great care is taken to keep up the temperature. The negative bath is the most easily disturbed by cold of all the chemicals used, or the effect of cold upon it produces the most annoying difficulties. And lastly, the bath should not be treated when the collodion, developer, or dirty plate holders are at fault. Be sure of the seat of difficulty, if possible, before applying a remedy.

## DEVELOPMENT.

BY D. H. CROSS.\*

THE proper development of the photographic impression involves a certain degree of dexterity in manipulation, as well as intelligence concerning the nature of the agents employed. Attention to composition, lighting, and exposure is of course very important, but this will avail little if the process of development does not receive its full share of attention. When the lighting and exposure are known to be faulty, there is at least a partial remedy in development. A knowledge of the nature of the agents used is important at the outset.

Protosalts of iron being used almost exclusively for development proper, I shall allude to them only.

The effect of protosulphate of iron when used alone is to give an image full of detail, but flat, grey, and devoid of contrast. The effect of acids of all kinds is to retard the action of the iron, and give contrasts or vigour. Acetic acid is used almost exclusively of late, both as a retarder and to give flowing properties to the solution. Formulae are of little use except as starting points, and as such I give one as good for a normal developer as any with which I am familiar.

Prepare a saturated solution of iron in water, and keep a sufficient quantity in readiness, as it will keep indefinitely. Prepare a second solution, 25 grains to the ounce of water (a common hydrometer is convenient, and sufficiently accurate for this purpose); add 3 or 4 ounces of acetic acid to 20 ounces of this solution; ordinarily, alcohol is not required. When it is to give flowing properties, the nitrate solution, "silver bath," should be partially evaporated. The person who develops should keep constantly in mind the strength of the light, the length of exposure, and the character of the lighting. If the lighting is soft and diffused, exposure may be shorter and developer stronger of acid, and the plate rocked more than if the lighting is decided and bold. If the lighting is decided and bold, the

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\* Read before the Photographic Institute of Chicago.



exposure should be longer and the developer stronger of iron, and the plate should be held quite still. The quantity of developer used affects the result; the lesser quantity gives greater contrast. A weak developer should be used copiously, and the plate held still when great delicacy and softness are desired. Close observation and quick decision are required just at the moment development has commenced. We should be in readiness, with weak and strong developers, to vary the quantities of solution on the plate, and to vary the proportions of acid and iron, and to rock the plate or hold it still, as the effect requires. Generally some or all of the above means will enable us to produce the effect desired; sometimes, however, in large work, there will still be too much contrast; if so, add a few drops of alcohol to the ounce of developer before flowing the plate, and I think this fault will be effectually cured. Never having seen this remedy for excessive intensity used or mentioned, I would call attention to it as one of the most effectual and convenient at our disposal. Indeed, it is so potent an antidote for hardness or chalkiness that care must be exercised, or flatness will result. The larger the proportion of alcohol within certain limits, the softer the result.

A general fault is under-exposure; there is no remedy for very short exposures, and there is little danger of over-exposure. A negative that is thin and flat may be made more contrasting and intense easily with pyro and silver. We will now strive to increase contrasts. This may be done by short setting the collodion film, and short immersion in the bath; add acid to the developer, use little developer, and rock the plate. Use more silver in the pyro when redeveloping, or increase the proportion of acid in the pyro.

## PHOTOGRAPHY IN NATURAL COLOURS.

BY M. DE SAINT FLOURENT.

In my first note addressed to the French Photographic Society in September last,\* I confined myself to describing the processes employed for the purpose of obtaining heliochromic pictures. Since then, some new observations have come under my notice, which I now propose to allude to, adding, at the same time, some details of the processes already described.

In the first place let me remark that heliochromic prints may be obtained without the intervention of a substance capable of giving, under the influence of solar rays, chlorine, or oxygen, in a nascent condition.

*Negative Heliochromic Impressions.*—If we expose, under a painting upon glass, a sheet of paper covered with sub-chloride of silver, prepared according to a plan which I will hereafter describe, and freed by washing from any excess of hydrochloric acid, we obtain, within a short time, a negative picture presenting all the colours of the model. This image will become a positive if the time of exposure is prolonged for a considerable period.

*Transformation of the Negative into a Positive.*—The result is exactly the same if, instead of employing the sub-chloride, we make use of the white chloride of silver, a circumstance which may be explained by the fact that the diffused light which traverses the glass at the same time as the coloured rays suffices to produce upon the surface of the paper a certain quantity of sub-chloride. The transformation of the negative image into a positive is due, perhaps, to the circumstance that in the last period of the reduction there is formed upon the surface of the paper in the parts corresponding to the whites of the image, products, the colours of which are relatively less deep than that of the sub-chloride. This action might also be due to the oxidising action of the less refrangible rays; but we shall recur to this subject again in the course of our remarks. A negative, it will be seen, may therefore be converted into a positive by continuing the exposure. The impression, on coming out of the frame, is plunged into a mixture

of nitrate of mercury and chloride of sodium, the latter being greatly in excess. In exposing, afterwards, to sunlight, the picture is seen to become positive, presenting feeble shadows, which are sometimes complementary to the primitive colours. It is probable that the saline mixture exercises, in this case, a more energetic chlorising action upon those parts of the image where the reduction has been more complete under the influence of light whilst the negative was produced.

*Preparation of the Sub-Chloride of Silver Paper.*—The sub-chloride of silver paper is prepared by plunging ordinary paper of good quality—whether albumenized or gelatinized, it does not signify—in an alcoholic solution of nitrate of silver of the undermentioned composition:—

Distilled water	...	...	20 parts
Nitrate of silver	...	...	20 "
Alcohol	...	...	100 "
Nitric acid	...	...	10 "

The nitrate of silver is dissolved in the distilled water, and the alcohol and acid added subsequently. The addition of a certain quantity of nitric acid is for the purpose of preventing the reduction of the silver salt by the alcohol, a reduction which otherwise would be very rapidly brought about.

The proportions here quoted need not be accurately followed; they may vary between very wide limits without any serious inconvenience resulting therefrom. Nevertheless, it is well to keep near to those proportions, if prints possessed of much intensity are required. On leaving the bath, the paper is pressed between sheets of blotting-paper, and then immersed in—

Hydrochloric acid	...	...	50 parts
Alcohol	...	...	50 "
Nitrate of uranium	...	...	1 part
Chloride of zinc	...	...	2 parts.

The chloride of zinc seems to impart vivacity to the colours, but it has the inconvenient quality, like the rest of the other chlorides, to tint the background when employed in too large a proportion. The nitrate of uranium added to the bath appears to have an influence upon the rapidity with which the sub-chloride of silver is formed.

The sheet of paper, on coming out of the hydrochloric acid bath, in which it should remain but a few minutes only, is exposed to light until it has taken a violet-blue tint if it is ordinary paper, or a violet-lavender if gelatinized or albumenized paper has been employed. If the colour is sufficiently intense there is no need for performing the operation a second time, and the paper may be forthwith employed.

Papers which have been albumenized, or even salted only, give excellent results; that known as Sutton paper, which may be obtained of M. Carotte, in Paris, is especially suitable. With papers of this kind I prefer to employ aqueous solutions. Sheets prepared with the sub-chloride may be preserved for a very long time if kept from the light, but, nevertheless, it is best to employ them immediately after they have been prepared.

*Sensitizing.*—When the production of a heliochromic print is desired, the sheet is immersed in a bath of water containing a few drops of a solution of mercury in nitric acid. I do not indicate the proportion of mercurial salt, the degree of concentration and the purity of the nitrate of commerce being very variable, so that the amount employed must be increased or diminished according to circumstances. If the proportion employed is too little, then the image produced will be a negative; and if, on the contrary, it is too much, the colours will have less vivacity. A few preliminary essays will soon give precise indications of the quantity which it is necessary to employ.

In any case, however, it is necessary to filter the solution to eliminate the basic nitrate which becomes precipitated in the vessel in which the mixture is made.

(To be continued.)

\* See PHOTOGRAPHIC NEWS, October 24th, 1873.

# The Photographic News.

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## THE PHOTOGRAPHIC SOCIETY.

THE meeting of Tuesday evening was a singular contrast to that held a month previously, in the same room. With the exception of some short sharp passages on the legality of various courses—which the chairman adroitly put aside by ruling that as no individual opinion could decide such legality, they would proceed in that course which seemed most conducive to the well-being of the society, and get an indemnity, if necessary, as soon as a legally constituted authority was established—the whole tone of the meeting was one of conciliation. At the outset Mr. Hughes, as chairman, suggested that this word—conciliation—should be the key-note of the evening. Mr. Hooper, in moving his resolution that the late president and officers should be invited to resume office again, urged the exercise of a similar spirit with equal good sense and good taste, and Dr. Mann gave his cordial support. Various of the requisitionists followed in the same tone, Mr. Walter Bird especially emphasising the esteem of those who had been in opposition, on a legislative question, for the council as gentlemen, and their appreciation of their services to the society. The resolution inviting the return of the late officers was passed with unanimity and cordiality, as was also the especial vote of thanks and the tender of a medal to Mr. Glaisher, as president. As we have not shrunk from the task of commenting with the utmost frankness on what we conceived to be the false steps of the requisitionists, we feel bound to express with equal frankness our conviction that every effort was made, in fact and in spirit, to disavow any lack of confidence in the president and council, and to remove any feeling of slight or discourtesy which former proceedings, in which it was admitted great excitement had prevailed, might have engendered.

The issue remains to be seen. We are unable to say how far these overtures will be accepted. The council, which knew so much better than any one else could do the unremitting labours of the president on behalf of the society, and his perfect loyalty to it as a society; that council who heard from the president's lips, on the first intimation of disaffection existing in the society, the assurance that, as he was president of the whole society, and not of any mere section of it, the grievances—real or imaginary—of any member of the society should receive his honest attention; the council which knew all this placed their official honour in the president's hands, to remain or retire with him; and they will of necessity, with equal readiness, act with him in relation to the resumption of office. We are unable to speak for him; but as we

have repeatedly heard him remark, in relation to recent questions, that interest of the society took precedence in his mind of any merely personal considerations arising out of these discussions, we conceive it to be probable that the society may again meet under his able presidency. In private life, if one gentleman having given occasion of offence to another hasten at their next meeting to disavow the intention of offence, and make the *amende honorable*, but one course, as a rule, remains, and that is to accept the disavowal, and resume a cordial understanding. We must confess to a hope that a similar course may be followed by the body of gentlemen concerned in the recent antagonism. We know that many of the gentlemen on the council, who have worked very hard for the society, are really anxious to retire and rest in the privileges of private membership; but as their resumption of office for the remainder of the session will possess the public significance of restored harmony, we cannot help expressing a hope, whilst we feel no right to urge our views further than is implied in such expression, that the overtures of those in opposition, of those who supported the council, and of the independent members, all combining in the unanimous vote of Tuesday evening, may not prove unavailing in securing the restored harmonious activity of the society.

## THE PROPOSED NEW LAWS OF THE PHOTOGRAPHIC SOCIETY.

THE revised code of rules prepared by a committee appointed at the February meeting of the Photographic Society is now in the hands of all the members. It is put forth, as Dr. Mann, on behalf of the committee, explained, as a rough draft for consideration, suggestion, and improvement. It has manifestly, however, been prepared with much thought and care, and must have involved much close labour, a special aim to meet any of the complications which late events have shown to be possible being maintained. The great length to which the document runs is somewhat startling, as it comprises not less than twenty-five sections, and nearly eighty clauses. This may be absolutely necessary to prevent the possibility of misconceptions, but we must confess that condensation seems to be desirable, if possible. As we have not, however, carefully considered the details, we here rather express a wish than suggest a possibility. The more numerous the conditions the more difficult it is to understand or remember the precise bearing of each, and the greater the risk becomes of involving unforeseen and unsuspected incompatibilities, some slight suggestion of which was made at the meeting on Tuesday evening.

In the main, the suggestions seem good, and in one or two points decided improvement has been made on the two new laws passed at the special meeting a month ago. The president, for example, is, in these rules, to be elected annually, and to be eligible for re-election every year, instead of being bound to retire at the end of three years, as in the rule passed a month ago. The treasurer and secretary are in like manner to be eligible for constant re-election, instead of being, as before proposed, bound to retire at the end of three years. In regard to the council, retirement by seniority, and ineligibility for immediate re-election at the end of three years, remain in the proposed new rules, and will constitute, we still think, as we before pointed out, an element of weakness, as rendering the necessary continuance in office for three years of officers who may, for various reasons, prove inefficient; and the imperative loss, at the end of three years, of officers, however able, experienced, and efficient they may be. Whether the advantages to be gained by a regular and methodical change in the constitution of the council will compensate for these disadvantages is, of course, a question open to discussion.

The most important addition to this code is a provision



for giving election suffrage to country members, in character something very similar to that we proposed some weeks ago. In engrafting this plan on to their project we think the committee have done wisely. But there still remains an important omission, which is, we think, the result of an oversight. There is no provision that we can find for the voting of country members on questions such as those which have recently been agitating the society. In the matter of elections provision is made, and balloting papers are to be sent out to all members, who may give effect to their wishes by duly marking such papers and returning them to the secretary; but on all other subjects—questions of alteration of law, for example—no such provision is made, and the new laws are altogether silent on the mode of voting on such matters. One sentence copied from the old laws implies, indeed, that personal voting only can be permitted in cases in which the ballot is not absolutely specified, as in the matter of elections. In the seventh section, clause twenty-four, it is enacted that members shall have the right to be present, and vote on all questions. This was the only clause in the old rules which seemed to exclude absent members from voting on all important questions by means of balloting papers. As on this point we apprehend there can be little difference of opinion as to the propriety of giving a voice to the entire society in any question of such weight as the alteration of the laws, it is only necessary to commend the matter to the consideration of the extended committee.

This brings us to another point of some importance. In adopting a new code of rules making extensive and important changes, it is surely desirable to secure the unanimous voice of the society, if possible. Surely some provision should be made for taking the vote of every member, whether residing in London or the provinces, whether able to be present at a meeting or not. The committee of the members generally to be held in a few weeks—in a fortnight, if convenient—will, of course, simply consider the subject; but before any final steps are taken, and when a satisfactory code shall have received general assent from a meeting in London, we trust the code will be submitted to the vote of members generally before it receives the force of law.

#### ACETATE OF LEAD FOR REMOVING HYPOSULPHITE FROM PRINTS.

“WILL the use of acetate of lead in the final washing water prevent the fading of prints?” The question has been asked of us some scores of times since we published Mr. Newton's suggestion a year or two ago. Our uniform answer has been to the effect that experience alone could determine. The experience of a committee in America, just recorded at a meeting of the German Photographic Association in New York, appears to be unfavourable. Here is the record, for which we are indebted to our friend Mr. E. L. Wilson:—

“When Mr. Newton, over a year ago, published his process of removing the hyposulphite of soda in the prints with acetate of lead, a committee was appointed to test this method thoroughly. Said committee reported at next meeting that the prints were, indeed, free from all hypo, but that the tone had changed a little from brown to blue. At the same time, fears were expressed that the new chemical combination would in time injure the prints. This has proved, now, to be only too true. The secretary, who was chairman of the aforesaid committee, subjected at that time several prints out of one day's printing to the acetate of lead washing, and kept these, together with other prints of the same lot, but washed in the usual manner. At the last January monthly meeting those prints were exhibited, and showed that those treated with lead were bluish-yellow, and very much faded, whereas the others had lost nothing of their original brilliancy.

The meeting thought it very desirable that other associations or individual photographers should publish their experience in this matter.”

#### THE REQUISITIONISTS ON THE ACTION OF THE LATE COUNCIL.

THE number of the Society's Journal published in advance of the usual time, to which we referred in our last, was issued a few days ago. It is chiefly devoted to a reply from, or on behalf of, the requisitionists, as for distinction we are compelled to style them, to the report of the last meeting, and the comments thereon, in the February number of the Society's Journal. When a spirit of conciliation has been manifested, we would not willingly use one word of recrimination; and passing without comment the animus which characterizes this reply, which was manifestly written before the conciliatory idea was dominant, we very briefly indicate one or two errors and misconceptions which it is important to correct.

We shall not again follow this article through the story of the requisitions in which the council is again credited with obstructiveness and with a desire to over-ride the requisitionists, and the provision upon which their request was based, beyond giving the simple and positive assurance that they who believe this statement are utterly mistaken in their estimate of the spirit and action, the aims and opinions, of the council. Neither in the council as a body, nor in the individuals composing it, have we ever heard of any indisposition to modification of the laws, or to the fullest discussion of the need for such modification. The sole complaint of the council is that the requisitionists seem from the first to have credited them with antagonism, and themselves to have assumed a position of antagonism. It is evident that a very dangerous mistake was made, and we earnestly hope that the misconception and its consequences are past. We omit the correction of some other trivial details in this rejoinder, because the mere discussion of their erroneousness might again evoke bitter feeling.

There is, however, one statement made in this rejoinder, which it is most important to correct. We quote it as it stands in the Journal just issued. It runs as follows:—

“The acting council assuredly believe that if the amendments had been accepted, a revised code of laws already prepared beforehand in all their details by the party of the old council would have been brought to the committee. If such were really the old council's plan, that is a somewhat important corollary to the proposal that six members of the committee should be appointed by members.”

The assured belief here expressed, is an utter mistake: it has not a shadow of basis in fact. No attempt to prepare a revised code of laws had been made. Two new rules, giving the fullest voting powers to country members, and much more comprehensive and liberal in spirit than those of the requisitionists, had been prepared as an amendment; but it was felt to be wiser and more conciliatory to propose a general revision, with the co-operation of the requisitionists, and hence the council's proposition.

But suppose such a code of rules had been prepared, and brought to the committee, seeing the requisitionists would have numbered six, and the nominees of the council three, if a dozen codes had been brought ready prepared, the requisitionists had the power in their hands by being able to outvote anything of which they disapproved. But discussion on this and other similar points is fortunately no longer necessary, and we can only hope that whatever the issue of the temporary convulsion in the society, no permanent bitterness may be suffered to remain.

#### PERMANENCY IN SILVER PRINTS.

THE old question, and the old uncertainty. Why do silver prints fade? Is it from imperfect fixation, imperfect washing, or the unstable material of which the image is formed? The answer is, probably, all three—at times

separately, at times in combination. As we have often said, we believe it is less due to imperfect washing than to other causes. The use of a lead salt to remove hyposulphite and dispense with the necessity of perfect washing appears, as will be seen from another article, to have proved a failure. If, as we have often urged, the mischief is most frequently due to action set up in the fixing bath, a plan suggested in the last number of Anthony's *Bulletin* is worth attention. Referring to some prints which had remained pure during various vicissitudes, the Editor says:—

"The only peculiarity in the management of these pictures was that a little air-slaked lime was diffused through the hypo. solution before the prints were put in it. This removed any uncombined sulphurous element, and prevented the formation of a sulphur compound of silver in the whites. If the cause of fading be the free hypo. left in the paper, that can be eliminated by the use of some solution containing a salt which by double decomposition forms an insoluble compound with the sulphur of the hypo. Those easy of acquisition are the nitrate of lead, nitrate of barium, and nitrate of lime. A great deal of evidence has accumulated in favour of the lead salt, and we have been and are surprised, considering the importance of the matter, that so little experiment seems to have been made in this direction."

The most recent evidence respecting the lead salt for removing hypo from the print appears to be altogether unfavorable; but the application to the hypo solution of a substance which unites with any uncombined sulphurous element appears to be free from objection of every kind, and is well worthy of further adoption. We add general details of the printing operations described as successful in the article in question:—

"In our practice we proceed as follows. Our silver solution runs from 30 to 40 grains of nitrate per ounce of water. To this are added a few drops of liquor ammonia, and the solution is shaken and allowed to settle clear. After being decanted, a small quantity of alum is added, and the solution poured into a dish for use. The paper is floated one minute, dried, fumed with ammonia about ten minutes, and printed. A washing bath is prepared by adding to each quart of water used, one drachm of acetic acid No. 8 (if pure). The prints are first placed in this, and left to soak about fifteen minutes. By the combined action of the ammonia still left in the paper and the acetic acid, the nitrate of silver is converted into the acetate, which remains in the water. The prints are subsequently rinsed (only) in two changes of water, and are then placed in the toning bath. It is not necessary to describe the toning bath, because by the acid treatment above described any properly made alkaline bath will answer perfectly well. After toning, the prints are placed in a tank with a small quantity of water. After the toning is finished, the prints are gathered in a mass and left in that state until next day, when they are fixed. After fixing, they are distributed in five large tanks. In these tanks the water enters at the bottom, rises through the mass of prints, and passes off at the top, descending through a pipe to the bottom of the next tank, and so on. The tanks are first filled independently twice, and the entire water drawn off twice. Then the water is allowed to run. We find that water running in this way three hours removes the hypo, so that by the starch test it cannot be detected. As a consequence of this mode of working, we are able to say that we never have faded prints, and never now have yellowish whites. It will be seen that in our practice we do not use the lead, lime, or baryta salts. The reason of this is that we wish to avoid too much handling of the prints, as the salts spoken of should be diffused through the water, from which the prints would necessarily have to be first removed. The above remarks apply of course only to prints likely to be affected by hypo left in the paper. It remains to be learned whether prints from which all the hypo, as indicated by the starch and iodine test, has been removed, do fade. If they be found to fade, investigation should be directed to the possible cause."

#### DRY PLATE DEVELOPMENT.

BY CAPTAIN ABNEY, R.E., F.R.A.S., F.C.S.

I WAS long under the idea that in order to be successful with alkaline development the addition of bromide was an essential, in order to avoid fogging of the image.

I have lately been practising the dry plate process I de-

scribed in the YEAR-BOOK, and have come to the conclusion that not only is such an adaptation not necessary, but is absolutely hurtful. I do not mean to say that with all processes this is the case, but that, in my process, where extra albumen or gelatine is used as a preservative, even though it be washed off after application, such addition is unbeneficial. Colonel Wortley (whose strong alkaline developer is, to my mind, the greatest advance in photography of the present day) has, I believe, arrived at a conclusion very similar; in fact, I have seen him develop his most sensitive plates without any bromide, merely adding glycocine. In the matter of albumen plates, the organic matter is already supplied; hence the addition of the glycocine with these is necessary.

I must here, however, state that, in my view, negatives are rarely of the highest class unless they be redeveloped with silver. There is almost always a something, nearly indescribable, wanting to give a negative the proper finish, if the whole of the density be procured by the alkaline method. It will be, therefore, readily seen that my previous remarks must be received with this proviso.

Bromide is not a restrainer or a retarder; it is a destroyer of the latent image; and I am convinced that the stronger the developer used, the less necessity there is of its employment. Gelatine or albumen, on the other hand, are controllers (not in the military sense, luckily). The development is only prolonged by their presence, and is thus brought under the control of the manipulator.

I should like to recommend those interested in dry plate work to try the following developers:—

- 1.—Pyrogallie acid (best English) ... 12 grains  
Water ... .. 1 ounce
- 2.—Liquor ammonia ... .. 880

Flow over a dry plate—such as I have described—enough of No. 1 to cover the plate; add to the cup one or two drops of No. 2; mix thoroughly and apply. The image will appear by degrees, and as development seems to flag another drop of No. 2 may be added till all detail is visible. Neutralize with citric acid and water (1 to 50) and re-develop with silver till printing density is obtained. The difference in exposure necessary for this development, and that necessary for development with weak ammonia added, has lately been brought home in a practical manner. Some of my men have been exposing plates for four minutes, using one drop of a five per cent. solution of liquor ammonia. With one of the same batch of plates I gave twenty seconds (less than I should have given a wet plate) and developed as above, and got a picture more brilliant and full of detail, and *no fog*. Fog is almost unknown by any of those using this development.

#### ON A NEW STUDIO.

BY SAMUEL FRY.\*

I MENTIONED last week that I would continue in the present number of the NEWS with a description of certain internal details which, though not so directly and immediately concerned in the production of pictures, are too often overlooked. As a rule, studios are unendurable during the heats of summer, and in winter the means of warming are very insufficient. In the building I am describing, during extremes of temperature out of doors, it is about the pleasantest room one could wish to inhabit. For ventilation during summer an opening two feet square is placed in each angle of the gable, with louvre boards moving by a cord. These openings being opposite to each other, the heated air is rapidly swept away without draught below. At the same time the side lights lift completely out, and during many months of the year are only replaced at night, and taken out each morning. During the extreme heats of last summer the room was the coolest place to be found. A similar system is applied to the developing room, where, under the sink, a large door opens

\* Continued from page 87.



to the outer air, being so arranged as to exclude light. A ventilating shaft opens immediately at the side of the sink, and causes a current to another at the top. All this is done without causing an unpleasant draught of air, and fumes of collodion and other chemicals pass off at once.

I look upon these as important matters. Many photographers suffer severely from impaired health, as I have done; and until this arrangement was made I was for some years rarely really well. I commend it earnestly to my fellow-workers.

And now with regard to warming in winter. A number of articles appeared lately in this journal advocating various systems of raising the temperature, but each of these was only suited for acting on one room, and appeared to cost almost as much for that as should have been required for a suite of business rooms. Every one must have studio, printing room, painting room, mounting room, and dressing room at least; and those in anything like an extensive way of business have many more. The most equal temperature is obtained, and only one fire required, by circulating pipes. In my own case, ten rooms are heated with 300 feet of pipe for thirty shillings per month. This is done without dust or trouble. In the studio is a cupboard through which the pipes pass for warming baths and developing solutions, drying negatives, and other purposes. During winter the baths are placed here at night, and in the morning are found at a good working temperature. In the developing room the pipes have a grating, on which the camera-slides, after wiping, are placed, and kept thus in good dry condition. The developing room should not be used as a laboratory; chemical operations are better done in a special room, thus leaving baths and solutions always ready for use. I like an abundance of light in the developing room, and a sliding yellow window, which, when open, leaves white ground glass for examining negatives against. On a shelf over the range of baths in use are grooved boxes fixed, and which hold the various sizes of plates. They are all albumenized and placed in the boxes, coated side downwards, thus avoiding dust. Those who once try this will not depart from it. Close at hand, in the developing room, is the mouth of the speaking-tube, by which I receive information from those who attend to sitters; and I can also, by a code of signals, communicate with the printing and painting rooms. This power saves much time just at the moment when time is valuable.

In all these arrangements my idea has been to enable me to get through with sitters in the most efficient and prompt manner. Good pictures are generally done quickly: one of the best men in England can take three poses of cards—two of cabinets, and a ten by eight picture—in twenty minutes. This is what it should be. All should be ready when sitters come, and no occasion for hurry or excitement, nor yet for keeping punctual people waiting.

### LIME CYLINDERS FOR THE LANTERN.

BY JAMES MARTIN.

ABOUT twenty years ago, when residing in the city of Exeter, it was my good fortune to meet with several highly intelligent and ingenious workmen in various branches of handicraft, by whose assistance I succeeded in carrying out several scientific experiments; amongst others was an attempt to make cylinders for use with the hydro-oxygen light without the troublesome, tedious, and sometimes dangerous process of turning and drilling them in the lathe.

An experienced exhibitor having once told me that when his stock of limes happened to be exhausted, and time pressed, he made a practice of using a bowl of a tobacco pipe as a substitute, the idea occurred to me that serviceable cylinders might be formed of pipe-clay, which might

be kept any length of time without injury, and be capable of resisting rough usage. According to my design, one of my workmen turned me a mould of box-wood; taking this to a tobacco-pipe maker, in a few days I received several cylinders, seemingly all that could be required. On trying these in the lantern, I found no perceptible difference in the light, but upon examination I observed that they pitted rather deeply and sharply, and that a tear of vitrified substance had exuded from the hole. Upon my reporting this to the pipe-maker, he said that he could easily obviate that by the addition of a little more grit to the composition of which they were made, and promised me some that would prove all I could desire. Business calling me just then to a great distance away, and having, in the meantime, found that serviceable cylinders could be easily made from common chalk (the method of doing which I gave to your readers some time since in one of my articles on the magic lantern) I allowed the matter to drop.

The ingenious experiments of Mr. Gilmour recall the whole to memory. As he invites suggestions, perhaps he will allow me to say that the coarser kind of chalk, containing more caustic lime than the finer, is no doubt the cause that they form the harder cylinders.

I would suggest that his next composition should be made as follows:—Taking a knob of white lime, let him place it in a colander, and pour sufficient water over it to damp it. In a little time it will fall into a fine powder; this is hydrate of lime, of which the mason makes his mortar. I need not say how hard this becomes when dry. I should also advise that the calcined magnesia should be used in preference to the carbonate, as containing a much greater proportion of its metallic base. It would be interesting also to submit some of the cylinders to the process of firing and annealing in a pipe-maker's oven.

### Correspondence.

#### GELATINO-EMULSION TRANSPARENCIES.

DEAR SIR,—From the many enquiries I am constantly receiving for information as to the *modus operandi* in producing the transparencies now seen by many, and as I really have not time to answer all letters sent me on this and sundry other matters connected with the gelatino process, and as my answers will equally apply to all who are interested in this process, perhaps you will kindly insert this for the benefit of all.

The transparencies I have made during the past winter have all been done by contact, the exposure ranging from one to three seconds by daylight, and from five to ten seconds by a gas flame. The time depends entirely on the density of the negative and the amount of light at the time of exposure. In all cases the exposure should be as short as possible, or the most satisfactory results will not be obtained. Trying a plate or two I exposed yesterday, I find the light is getting strong. I gave one second, or as quick as I could expose, and they were fully timed. The developer is the same as directed in my instructions for plates generally, with a little more strengthening or intensifying than usual, as they lose a little in the clearing out, and by which you get the parts unacted on by light as clear as the glass itself.

If a rich black is wished, proceed as follows:—Drop into a glass measure four or five drops of a fifteen-grain solution of gold in one ounce of water, and flood the plate with it until the desired colour is obtained. Wash thoroughly, and pour over the following mixture: cyanide of potassium, ten grains; water, one ounce (this can be made in quantity, as it keeps for some time), to which add a few crystals of iodine, until it will, on shaking well, take up no more; then add a little more cyanide, to have it in slight excess of the iodine. Pour on a little of the above, and you will very soon have a clear transparency. Wash well, and dry spontaneously.

A question put to me repeatedly is, what advantage do you claim over the present processes in use? My reply is, simplicity,

cleanliness, and economy; and with this I shall leave the matter in your own hands, as I herewith enclose a small packet of the pellicle to test, for yourself, and shall be pleased to know the result, good, bad, or indifferent. As, at times, our greatest failures lead on to our greatest successes, I am as anxious to hear of failure as success.

In conclusion, allow me to thank all those gentlemen who have so kindly wished me success.—Your very obedient servant,  
R. KENNETT.

## Proceedings of Societies.

### PHOTOGRAPHIC SOCIETY OF LONDON.

THE adjourned general meeting of this society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, March 10th.

MR. Jabez HUGHES took the chair, and explained that, this being an adjourned meeting, he had been requested to take the chair in continuation of the position he held in the meeting a month ago. Before the minutes were read he wished briefly to refer to some matters connected with the meeting last month, in which some excitement, and possibly bitterness, prevailed. He hoped that during the time which had elapsed these feelings had subsided, and that at the present meeting everyone would realize the full force and value of the key-note which he wished to sound at the outset, and which would be found in the word "conciliation." (Applause.)

MR. F. HOWARD, acting as secretary to the council, proceeded to read the minutes of the special meeting.

MAJOR MALCOLM, on the chairman's appeal as to whether he was to sign the minutes, proposed that the subject be postponed until that day six months, a parliamentary process with which the meeting was perfectly familiar. Without being a frequent attendant at its meetings, he took a deep interest in the society, and had been much pained by the record of the proceedings at the last meeting. Much strong feeling had prevailed, and there had been already, as he conceived, a too hasty rush into print, and probably there was much of the record of the proceedings which, on mature consideration, it would be found a good thing to have removed. The attack on the president and council—

MR. GREENWOOD rose to order.

THE CHAIRMAN suggested that Major Malcolm would have an opportunity of raising any question he wished at a later period. The only point at present was the question whether the minutes read were an accurate record of the proceedings.

CAPTAIN ABNEY said that the confirmation of the minutes was equivalent to the third reading of an Act of Parliament, and gave the force of law, which, till confirmed, they did not possess.

THE CHAIRMAN said that they had taken the opinion of various lawyers, including two Queen's Counsel, and all decided that the confirmation of the minutes simply implied an acknowledgment of their correctness, and had no effect on the legality of the proceedings; that legality depended on the proceedings themselves, and was quite independent of the existence of minutes at all.

CAPTAIN ABNEY said there would be no difficulty in getting the opinions of a dozen Queen's Counsel to precisely the opposite effect.

AFTER some further discussion the question was put to the meeting, carried, and the minutes confirmed.

MR. HOWARD then read the minutes of the annual general meeting, which having been confirmed,

THE CHAIRMAN said the next business was the election of officers to fill the existing vacancies. The gentlemen in office at the last meeting had felt that the proceedings implied a want of confidence, and had resigned their offices. They had not, however, resigned their membership of the society, and, being members of the society, were as eligible as any one—probably, for many reasons, more so—for election now. A gentleman present had given notice of a motion in which he would propose that the same gentlemen who held the offices should be again elected to fill them. Speaking as a member, and, he believed, expressing the feelings of many with whom he had worked, he would say there was no objection of any kind to these gentlemen. The difference which had existed did not imply any objection; it was merely a difference of opinion as to the proper mode of election. He believed that the acceptance of this motion would be the best and wisest thing which could be done, and one peculiarly fitted to heal any difference or breach in the society. The resolution of

MR. HOOPER was to the effect that the president, vice-presidents, treasurer, council, and secretary be again requested to take office for the remainder of the session, all officers being elected at the next annual general meeting in accordance with the new laws about to be framed.

COL. WORTLEY rose to order. He asked if it would not be necessary to re-elect all the officers of the society?

THE CHAIRMAN said, no, only those to fill the vacancies caused by resignation.

MR. HOOPER felt great satisfaction in hearing the chairman give, as the key-note of the evening, the word conciliation, and would try to maintain it. When, at the last meeting, Dr. Mann distinctly stated that the proceedings of the requisitionists were not intended in any sense as a vote of want of confidence, he had suggested that some steps should be taken to give effect to that avowal. Nothing would so effectually do so as to re-elect the same officers. As an independent member, belonging to neither party in this difference, he felt that he could with propriety urge this as a step having the good of the society, and not of any party, for its object; and in urging it upon them, he did not plead for a majority simply—that he felt quite satisfied; but he earnestly urged upon every member the importance of unanimity in a vote asking the return of their officers to take charge of the society through the period of revision, for they could hope to do little else this year; and he hoped that the changes would in every respect make this society the national society of Great Britain. He asked that the vote should be given unanimously, with that dignity and grace which could best give it value, and that henceforth the society would work in perfect harmony to the benefit of all its members and of the art it represented. (Applause.)

DR. MANN had great pleasure in seconding this motion, and giving it his support. He hoped that the old officers would again resume office, and aid in guiding the society as in the past.

COL. WORTLEY moved an amendment to the effect that a certain number of the old officers be elected, and some other gentlemen, whose names he substituted, for some of those of the old council.

THE CHAIRMAN pointed out that a greater number of names had been proposed than the vacancies.

COL. WORTLEY stated that all the officers of the society required election now, as he contended that there were none in legal existence. As the chairman had taken legal opinions, he might mention that he also had taken legal opinions, which left no doubt that the proceedings of the last meeting were illegal. He had now suggested a means of retrieving the position by an entire new election. If they declined, the consequences must be on their own heads.

THE CHAIRMAN said that for the present they must consider the proceedings legal and valid. If they were not so, disintegration of the society must follow. To save the society they would risk assuming the legality of their proceeding, and when they had a council fully and legally formed, they would ask for an indemnity for any proceedings the legality of which might seem legal, but which were taken to secure the position of the society.

AFTER some confused and conversational discussion, in which many members took part, Col. Wortley withdrew his amendment.

A motion to elect the old council individually seriatim was also made, and after some discussion withdrawn.

COL. WORTLEY then proposed that Dr. Diamond be added to the council.

MR. SPENCER urged the adoption of Mr. Hooper's motion as tending to the restoration of harmony.

MR. SAWYER also supported the same motion as a means of securing harmony, and doing it in a graceful manner.

MR. WALTER BIRD regarded the motion as one both of policy and of loyalty to the society. He had joined in the late proceedings because he was opposed to the views of the late council in relation to certain points of legislation; but he was not opposed to any of them as men. Indeed, he doubted if better men could be found in the society for the position they had held. Looking at their executive operations, it must be fully admitted that they had managed the affairs of the society with energy and success, and had brought it through a period of considerable difficulty, from a state of pecuniary deficiency, to one of prosperity and success. The loss of many of them would be a considerable loss to the society. He certainly hoped that they would be re-elected as a body as the most delicate and graceful mode, securing reconciliation and future harmonious working.

CAPT. ABNEY said that in the course of the discussion such questions evoked, hot words were apt to be spoken on both sides. He wished, however, to disavow the slightest personal feeling to



the requisitionists. He thought that another and wiser course might have been taken by them, but that he did not now wish to discuss; he simply, in speaking for himself—and he thought he represented many who had acted on the side of the council—wished to disavow personal bitterness, and for himself, if he had spoken hot words which had pained anyone, he withdrew them.

After some further conversation, the vote for the return of the council in a body was put and carried, amid considerable applause, unanimously, with one exception—one hand was held up in opposition.

The CHAIRMAN said that as the election of the six officers at the last meeting had been effected in the midst of much excitement and feeling, they now wished to resign their offices into the hands of the meeting, so that their places could be filled by the meeting. As there was nothing of pique or feeling in this step, he might state that they would serve again if re-elected.

Mr. REED moved that the six gentlemen who had taken office in the emergency of the society be re-elected.

Mr. SPILLER, as senior vice-president, but without pledging his fellow-officers to any course in this matter, had pleasure in seconding the re-election of these gentlemen.

The resolution was carried unanimously, as was also a vote of thanks to Mr. Bird for having accepted temporarily the office of treasurer.

Mr. SEBASTIAN DAVIS proposed that a vote of thanks to Mr. Glaisher for his past services as president, together with a silver medal, should be presented to him.

Mr. WENHAM seconded the resolution, which was carried unanimously amid considerable applause.

Some general discussion on the draft of the new laws followed, the chairman suggesting that the gentlemen to have been nominated by the late council be now added to the committee, as the best carrying out of the spirit of harmony and conciliation.

Mr. STILLMAN thought that the laws had better now be handed over to the council generally for their consideration and suggestion.

Mr. WERGE objecting to the confusion this might cause,

Dr. MANN pointed out that at present the rules sent out were merely a rough and ready draft for improvement.

Mr. ACKLAND and Mr. GREENWOOD made suggestions as to details.

Major MALCOLM pointed out the danger of hasty decision, as the work of securing laws harmonious in themselves and efficient in working, required much care and thought. There was, he thought, room for improvement yet in those sent out.

After further discussion it was resolved to bring the draft, at a speedy date, before a committee of the society, the time of which would be duly announced; a fortnight from the date of the meeting being mentioned tentatively. After a vote of thanks to the chairman the proceedings terminated.

#### EDINBURGH PHOTOGRAPHIC SOCIETY.

An ordinary meeting of this society was held in the Hall, 5, St. Andrew Square, on the evening of Wednesday, the 4th, Mr. R. G. MUIR, president, in the chair.

The minutes of previous meeting were read and approved, and Messrs. D. Dalgleish, James Allison, George Lisle, J. C. Hay, R. Menzies, Alex. Snutherland, and Thomas Pringle were admitted ordinary members.

Mr. ALEXANDER HENRY said that it was, perhaps, not much in the shape of honour that the society had to bestow, but he understood that it had from time to time done what it could by electing as honorary members those who had made their mark in the annals of photography. He had, therefore, much pleasure in proposing that the name of Captain Horatio Ross, of Wyvis Lodge, Rosshire, be added to the honorary list. The world generally knew something of what Captain Ross could do with his rifle, but photographers knew that he was equally at home with the camera, and that, too, in a line that was, from its difficulty, not often attempted, namely, the photographing of deer in their native haunts. Some of the members had recently had an opportunity of seeing specimens of his work in that department, and he was quite sure that they would agree with him in saying that they were such as would do credit to any photographer. Captain Ross, he said, had been a pioneer in the art, and, while honouring him, the society would be doing honour to itself in electing him as one of its honorary members. The motion was seconded by the secretary, Colin Sinclair, and carried by acclamation.

It was proposed and carried the same way that Mr. John Peat,

who had been an active member of the society from its foundation, and who had removed to London, be elected a corresponding member.

The next business was a discourse on the Polarization of Light, with illustrations, by Mr. W. Gilmour and Dr. John Nicol. Dr. John Nicol began by saying that he thought it necessary to apologize to the society, not for bringing the subject of polarized light before them, because, although he was not as yet prepared to connect it in any way with the practice of photography, no one could say how soon such a connection might be discovered. Photography was gradually passing out of the domain of empiricism into that of an exact science, and whenever the transformation was complete, he had no doubt that a knowledge of polarization, as well as of everything else connected with light, would be found useful. Neither did he need to make an apology for Mr. Gilmour, as they would very soon see that he had not only a stock of apparatus for the production of the most beautiful illustrations, but that he knew very thoroughly how to use it to the best advantage. The apology, therefore, was for himself; and what he honestly felt was, his presumption in coming before them with his very limited knowledge of such an abstruse subject. He, however, felt it due to himself to explain why he had undertaken a duty which he considered himself unfit for. Some months ago he had been at a meeting of the Pharmaceutical Society, at which Mr. Gilmour read a paper on polarized light, accompanied by a series of very fine illustrations; and he thought it would be very desirable to get it repeated to the members of the Photographic Society. When he, however, called on Mr. Gilmour, he found that gentleman's modesty standing in the way, but he (Mr. Gilmour) offered to conduct the experiments on condition that he (Dr. Nicol) would undertake the description. "In this way," he continued, "I was led into undertaking the work, not because I thought I could do it properly, but because it seemed the only way by which the very fine illustrations could be seen by the meeting." He then said that the wave or undulatory theory was now almost universally accepted, and started with a description of what he called a fundamental principle, the doubling of the intensity of a wave when two half undulators were evenly superposed, and the interference producing darkness when they met unevenly, in consequence of the trough of the one fitting into the ridge of the other. The spectrum was then placed on the screen, and the principle of refraction explained and illustrated. He then explained the laws of reflection, and called special attention to the fact that, when a ray falls on a plate of glass at an angle of between  $56^{\circ}$  and  $57^{\circ}$ , one portion is reflected and another refracted, as at other angles; but at that particular angle which is the angle of polarization for glass the refracted and reflected rays are found to possess different properties; so that if the refracted ray is allowed to fall on another plate at a like angle, it will all pass through, and none be reflected; and in like manner the reflected ray, if sent to a plate at a like angle, will all be reflected, and none pass through. If, however, the second plate be turned one quarter of a circle, and the same angle be maintained, then the reflected ray will be refracted, and *vice versa*. This, he explained, was polarized light, and the phenomenon was accounted for by supposing that the undulations were propagated in various directions, or planes, say in horizontal and perpendicular. When the undulations fell on a plate of glass, those that were in the plane of the structure of the plate passed through, while those that were at right angles were reflected. In this way the refracted waves, being in one plane, would pass through the second plate if its structure was parallel to the first, and be reflected if it stood at right angles. After describing the construction of the lantern polariscope, he went on to show that certain crystals which were of unequal density possessed the power of double refraction, or of separation of the light into two planes of polarization, and illustrated it with a rhomb of Iceland spar, which separated the rays into two discs on the screen, and when the discs were caused to partially overlap each other, and a plate of selenite introduced, the composition of white light by a colour and its complementary was beautifully shown. After showing tourmaline, and several other natural doubly refracting crystals, he explained that doubly refracting properties could be artificially given to glass by heat, pressure, &c., which was also very successfully shown by Mr. Gilmour. He next called attention to the colours of the soap bubble, and explained that they were caused by the reflections from the outer and inner surfaces of the exceedingly thin medium meeting at such positions as that the green and violet should by interference produce darkness, white and red should be doubled, and so on with all the rays. In this way, he continued, when a plate of selenite is interposed between the polarizer and analyser, by its doubly refracting power

it bifurcates the polarized ray, which, in passing through the latter, is split up into the three coloured undulations of which it is composed, two of which, by interference from the cause previously explained, neutralize each other, letting the third appear as coloured light. The interference rays are changed at each quarter of a revolution of the analyser, and so the change of colour is produced. Mr. Gilmour then introduced a series of unannealed glasses with fine effect, followed by a number of slides of crystals of morphia, salicine, borax, &c., &c., and finished up with some plates of selenite, cut so as to represent roses, tulips, pansies, &c., &c., which elicited much admiration.

Mr. TURNBULL then reinstated his improved lamp for the lantern or sciopticon, and showed that he had overcome the objectionable dark line over the screen. The lamp, as will be remembered from the report of the last meeting of the society, contained three wicks, and gave a decidedly brighter disc than that supplied with the sciopticon, while the dark line complained of then was altogether wanting when the lamp was slightly angled.

Votes of thanks were then given to Messrs. Gilmour and Turnbull and Dr. Nicol, and the meeting adjourned.

## Talk in the Studio.

**LECTURE ON PHOTOGRAPHY.**—A lecture on photography was delivered in the Congregational School-room, Ryde, last week, by Mr. Arthur Debonham, who gave an interesting historical and descriptive account of the art, and illustrated it by experiment.

"THE PICTORIAL WORLD" is the title of a new weekly journal, which promises to be a valuable addition to periodical illustrated literature. It sends out a capital first number, with a very fine rendering in wood engraving of one of Messrs. Robinson and Chorrill's charming studies of childhood.

## To Correspondents.

**W. JONES.**—You should have stated the details of your mode of working your collodion transfers, and we could better have aided you. Is the image toned, and how? Judging from the general appearance of the print, it has been fixed in old hypo saturated with silver salts, and imperfectly washed, leaving some of this hypo in the film. This would cause a result similar to that you send us.

**CANCER.**—Lithographic ink, with modifications to suit conditions, is used in photo-collodion printing. We presume that some such firm as Hughes and Kimber would supply it; but as it does not come strictly within the scope of our experience, we cannot say with certainty. 2. We do not quite understand what you mean by "binding down the edge of Waterhouse plates." 3. Captain Waterhouse has described from time to time different experimental modifications, but each formula must be taken by itself, and not necessarily as a condemnation of the whole, or some part of another. 4. The addition of nitrate of baryta to the silver bath necessarily causes a slight veil or deposit on the image, especially perceptible in the shadows after development with iron. The process of varnishing will cause this to disappear. 5. We cannot specially recommend any lens or maker in this column. 6. Albumen is always liable to decompose with keeping. Try the dried albumen, which Hopkin and Williams supply. 7. We do not know much of the work of Geymet and Alker. Possibly the paper for Mariotype may be had of Marion and Co., Soho Square.

**PIUS (Birmingham).**—If you use a strong solution of chloride of gold in an acid state it will often bleach the image very seriously. When you find this happen, dilute the solution, and add a little chalk to neutralize it. Plate glass is preferable to crown for working the eburneum process.

**AMATEUR.**—As a rule, and for general purposes, a neutral silver bath is best for printing purposes. An alkaline bath has some advantages in sensitiveness, but it is apt to dissolve the albumen and to get discoloured. The prints you enclose are suggestive of somewhat flat, fogged negatives, and if this is the case it would account for slow printing and weak, flat results. So far as you describe your printing operations, they do not account for the faults of the prints. We should, however, use a forty-grain bath, and until you have gained some experience avoid experimenting with such additions to the bath as alum.

**ACETIC.**—We do not remember the address for which you ask.

**CELUI-CT.**—By a powdery collodion is meant one which gives a powdery film in contradistinction to one which gives a horny, tough film. We cannot say certainly that any commercial sample will always possess that quality. That you mention is rarely so when new. Most samples acquire that character with age, although some have it from the first. This is a point upon which you will have to rely upon your own discrimination and observation.

**DEAF-AND-DUMB ARTIST.**—You will have seen that the formula appeared. It stood over for a week or two owing to the pressure upon our space.

**COL. BATCHELOR.**—Mr. Manners Gordon is not in England at present, and we are uncertain at the moment of his address. We will forward the letter when he returns.

**R. J. L.**—Various forms of press have been tried in photo-collodion printing, and each has some advantages; but we believe that the ordinary platen press, used for letter-press printing, is found to have the fewest disadvantages. 2. The plate requires preparation in rolling up, much the same as a lithographic stone. As you must see that at present it is to a great extent a new industry, and that every one must gain his own experience.

**F. B.**—The proportion of water and chloride of gold is not, within certain limits, a question of vital importance in toning. Various printers use from five ounces to ten ounces of water to one grain of chloride of gold. The weaker solution tones more slowly, and does not require watching so closely. The acetate toning bath is not strictly an alkaline bath. The acetate of soda, which is a neutral salt, is decomposed, free hydrochloric acid generally present in samples of chloride of gold in greater or less degree being neutralized, and acetic acid liberated. It is always desirable to rinse prints on leaving the toning bath before placing them in the fixing bath, or otherwise the hypo is apt to be decomposed, and sulphur toning result.

**G. D.**—Your attempt to produce the softened effect which has been named photo-mezzotint has failed because you have printed with diffused light. You must print with direct sunlight, or, failing that, you must place your printing frame in a box, which will cut off any but direct rays. If rays from all directions pass through the negative when it is not in contact with the paper, it is clear that only a blurred mass must result. With direct light, a piece of thin glass answers very well.

**ANOTHER BONA FIDE.**—See report and leader on the subject. There seems to be a probability of the restoration of harmony. The laws you have received are simply a draft for consideration.

**TROUBLED.**—The yellowish brown stains are due to imperfect fixation. You have been using your fixing solution over and over again until it is exhausted and acid; or the prints have stuck to each other whilst immersed; or you have used the solution at a very low temperature. The fixing bath should be fresh, not too cold, should not be acid, and the prints should be kept in motion.

**R. D. F.**—Yes: a weak developer is useful in copying engravings. If you use the five-grain iron solution, add about ten minims of acetic acid.

Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED.

- Mr. J. MACK, Belfast,  
Two Photographs of Rev. J. White.
- Messrs. HOLBORN and TURNER, Bristol,  
Photograph of Rev. H. P. Massy.
- Mr. AMEY, Landport, Hants,  
Photograph of Mrs. Martin.
- Messrs. TATTERSALL and ROGERS, Accrington,  
Photograph of Captain Moppett.
- Mr. J. BARNARD, Bedford,  
Photograph of G. Hurst, Esq.
- Mr. Sisson, Melton Mowbray,  
Photograph of Dog's Head, from an engraving.
- Messrs. BOORMAN, Red Hill,  
Five photographs of Bishop Wilberforce's Memorial Stone near Dorking.
- Mr. AMEY, Landport,  
Two Photographs of Mrs. Martin.
- Mr. GASSON, Winchester  
Two Photographs of Thos. Fletcher's Tombstone.
- Mr. J. E. MAYALL, Brighton,  
Three Photographs of Sir Samuel Baker.  
One Photograph of Lady Baker.
- Mr. FYFE, Glasgow,  
Photograph of Steamship "State of Virginia."



## The Photographic News, March 20, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO

POLITICAL PHOTOGRAPHS—ANTIQUITIES IDENTIFIED BY PHOTOGRAPHY—ONLY AN AMATEUR—HOW TO RENDER GLASS OPAQUE OR FROSTED.

*Political Photographs.*—Photographers have been getting into trouble in Alsace and Lorraine. Certain pictures have been published, it appears, and exposed for sale in the shop windows of Mulhouse and Strasburg, which the German Government declare to be political emblems, and injurious to the new régime. The precise nature of these photographs has not transpired, but we were informed some time ago that M. Braun's establishment at Dornach, whose beautiful pictures of Swiss and Alsacian peasantry are well-known, was busy publishing in large numbers two magnificent prints representing Alsace and Lorraine. The pictures represented peasant girls, gracefully posed in their national costumes, and wearing a sad face of mourning, which could not be interpreted otherwise than that the country they represented were *en deuil*. They were very fine examples of art photography and carbon printing, and such charming pictures, as a matter of course, found a ready sale at Paris and in the French provinces. We should very much regret to hear that it is these excellent photographs that have roused the ire of the German Government, for although one might purchase such things with a certain degree of sympathy, they would scarcely lead, one would think, to foment any international quarrel, or to embitter the hostile feelings of the anti-German party. These pictures may, however, have led to the production of others, scarcely so temperate, for the complaint made is, that some of the photographs not only represent peasants in national costumes, but have, moreover, a tri-coloured cockade affixed to a mourning cap, signifying, obviously, unalterable devotion to the French cause. After all, the publications do not seem very serious, and scarcely to warrant the strictures put upon the shop-keepers of the cities we have named, in the form of a circular which has been addressed to all librarians, printsellers, and photographers, forbidding them to sell or expose in their windows any print which may be invested with a political meaning.

*Antiquities identified by photography.*—A colossal stone statue has recently been grubbed up in the vicinity of the Thames marshes, not far from an old point of disembarkation, where Government ships were wont to discharge their cargoes some seventy or a hundred years ago. The statue has been rescued from its inglorious position, scraped and washed, and placed in an upright position upon a civilised grass plot, and now the question has arisen, what is it, and where does it come from? The scornful treatment it has received, both in this country and elsewhere, is plainly shown by the dilapidated appearance it presents, for one can only give a hazardous guess as to the real nature of the work. The stone is said to be Egyptian granite, and the statue, which is of heroic size, standing nine or ten feet high, has been pronounced by a connoisseur to be that of a Roman centurion. But other opinions are desired upon the subject, for it may turn out a valuable piece of sculpture, and the dicta of men learned in the matter, at present residing at Cambridge, Berlin, and Vienna, are sought. Years ago there would have been no alternative but to get the *savans* to come over to see the image, or, if they would not come, then the mass of stone would have to go to them. Now, thanks to photography, a half-dozen large prints, showing the statue from various points of view, demonstrate quite as much, almost, as a careful examination of the work itself. Therefore no great expense need be incurred in regard to its preservation until competent men pronounce, from the evidence before them, whether

the statue is really a valuable one or not. This is one more illustration of the way in which photography steps in most opportunely to aid in the discovery of truth.

*Only an Amateur.*—Albert Smith used to tell us, in his memorable entertainment, that although no photographer himself, he had a friend who had considerably distinguished himself in the art. This gentleman had attempted a most difficult subject, and succeeded to his entire satisfaction, as Mr. Smith himself was ready to testify. The picture which the amateur photographer secured was one of Strasburg, taken from a distance and on a dark night, and, as the lecturer averred, the rendering was in every respect most truthful. Not a vestige of the town could be seen from the spot whence the result was secured, and similarly, nothing at all was visible upon the plate. This was probably the first well known joke made at the expense of amateur photographers, and in all probability, too, the last, for these gentlemen, instead of being behind their professional brethren in the art or science, are, as a rule, considerably in the van. At any rate, in England, we have learnt very much from the *dilettanti* section of photographers; and, to mention one instance more especially, the problem of dry plates has almost entirely been worked out, and the films brought to their present state of perfection, mainly through the efforts of gentlemen in this country who have spent much time and expense in carrying on investigations which were to them a pleasure rather than a duty. In other branches of photography the assistance of amateurs in perfecting our art science is also well known, and if so minded we could at once point to a score of clever and skilful gentlemen who have earned honourable mention as disciples of the camera. In France, in Switzerland, in Russia, in Germany, and other countries the work of amateurs has also stood prominently forward, and aided much in the progress of the art, and it will be a sad day indeed for us all when these cease to identify themselves with photographic art and science.

*How to render glass opaque or frosted.*—There is a capital plan mentioned in *Dingler's Journal* for frosting glass, or rendering it opaque, which may be useful to photographers, especially as it is one very easy to carry out. A sheet of ordinary glass, whether patent plate or crown does not matter, is cleaned, and if only portions of it are to be frosted, those are left bare, while the others are protected by mechanical means in any simple manner. Some fluor spar is rubbed to a fine powder and mixed with concentrated sulphuric acid, so as to make a thin paste, and this is then rubbed by means of a piece of lead upon those parts of the glass required to be rendered opaque. A fine frosted outline or design may thus be produced upon a sheet of smooth transparent glass. To finish the operation, the glass is gently heated in an iron vessel covered with a funnel passing up the chimney, to get rid of the noxious fumes that are given off; on cooling, the plate is washed with a dilute solution of soda or potash, to remove any acid yet remaining, and is then rinsed in water. Focussing glasses for the camera, and development glasses for pigment printing, can be prepared in this way at very little expense.

### AMERICAN CORRESPONDENCE.

THE PHOTOGRAPHER AND THE COLOURIST—HOW TO GROW AND IMPROVE.

*The Photographer and the Colourist.*—No doubt a great many prints are made by your leading photographers on unalbumenized paper for colouring upon; and no doubt your colourists grumble and growl over the prints they get as much as ours do. A word or two of friendly counsel, then, from a colourist to the photographer, for the benefit of both, which I quote from a letter sent me by one of the injured. After charging us to "be clean," and to carefully handle and mount the pictures, he says:—



"The tone, I am well aware, is a mooted question among artists, or so-called artists; for he who contends that the brown tone is the proper one does not fully understand his business, and I can prove it. There never can be made a clear flesh and blood face over a brown tone. Especially is it impossible to depict certain varieties of complexion true to life, with their marvellously pure sea-shell tints, and transparent blue traceries of veins. Where the deeper shadows are above the eyes, under the chin, and some other occasional shades, the tone does not matter—it is well enough there; but in the lighter shadows, on the temples, brow, under the eyes, about the mouth, and on the neck and bosom, there should not be a trace of brown; for these are delicate shades, greyish, or inclined to blue or green, and must be pure and transparent, showing no dirty under-current of any other colour, and especially any colour made in the photograph. The painting which shows the photograph peeping through its colours reminds one of that economical young woman who inquired how much it would cost to have one coat of paint on her picture. The photographic print should be used simply for the assistance its outlines give to the production of a correct likeness; that secured, it should be completely covered, painted out, and entirely lost for evermore to mortal vision—only the painting left, with its firm flesh and graceful draperies standing out independently from the distance of the background.

"Next come those artists who stipulate for a blue tone. That is not much better than brown, but is a little. I need to call loudly for that myself before I learned better. But there are certain complexions which cannot be painted any more successfully over a blue tone than can some others over the brown.

"Then comes that perfection of tone for all kinds and descriptions of to-be-painted pictures; the clear neutral grey, than which there can be none more suitable. Any photographer from whom I receive prints with this tone has my enduring respect. For crayons and inks this is the only one that is admissible, inasmuch as it is impossible to hide the photograph in those truly beautiful productions of art when the prints have any approach to colour, as red, brown, or blue.

"In the working of pictures which have a blue tone, a compromise is often effected by a mixture of colour with the ink, till the photograph's tone is, so to speak, infused into it. This, too, is done for working a brown tone, and the effect in the finished picture, although better than could have been gained without, looks like an expression of bad taste in the artist, when it is only his misfortune that he is compelled to resort to such means. The brown crayon print, though, is irremediable; for crayon cannot be modified by red or any other colour. Black they are as drifted charcoal, and black must they remain, though the print be as brown as a nut. And these pictures, bear in mind, are expected to delude people into the belief that they resemble fine lithographic engravings; and properly made they do, only that they surpass them.

"But do you not see that these coloured faces, stippled with black, bear not the slightest similitude to an engraving, with its pearly lights and effectively transparent shadows? To cover the brown tone of the shadows, the crayon must be ground in until it reaches a density that gives an effect too sooty for any white citizen. This never will do; so the brown shadows and red half-tones must be allowed to look through the crayon, the lighter parts of the background must remain of this same colour, so decidedly foreign and inimical to the supposed object of the picture, and the high-lights in the drapery must also take part in the general discolouration.

"Perhaps I have devoted too much time to this talk about tone; but I do not think that too great stress can be placed on its importance; for why should we not, in one piece of work as well as another, be fastidiously careful in every minor detail which goes to make up the grand result.

"When we attempt the portrayal of flesh in colours, on canvas or paper, all acknowledge that there cannot be too great care in searching out in the human face, and perpetuating in the pictured one, all the delicate tints and all the peculiarity and richness of colour that can be found, to make it approach, as nearly as lies in human power, the living, breathing original. Then why should not the photographer and artist work together to secure every means in their united power, to make ink and crayon pictures as minutely as possible like the engravings they represent?"

*How to Grow and Improve.*—We must all admit that in photographic portraiture, at least, great strides have been made during the past five years, and that there has been a wonderful awakening desire among the photographers for improvement. The source from which they may learn the

most is, of course, the magazines and books that are published especially for them, and it is cheering to know that many are willing to admit this, and show their appreciation of it by continuing to read. Mr. L. G. Bigelow, the author of the excellent "Album of Lighting and Posing" which bears his name, has recently been on a tour, and he sends me a few observations on this score which he made, and which I give you below, hoping they may show those who wish to grow and improve, and who don't know exactly how to go about it, the proper way:—

"After an extended tour in the west and northwest, I am able to say positively that the next exhibition of the National Photographic Association will be strongly represented by delegates and exhibitors from those sections. The desire to exhibit work seems stronger and more unanimous than on any previous year, and many at present unknown names will, after the Chicago Exhibition of 1874, stand in the front rank with our ablest professionals. Away in some secluded village, off from the main lines of travel, I have been startled with pleasure to find productions which will compare favourably with that produced in many metropolitan galleries. In one special instance, on inquiring as to the means used in acquiring the knowledge and taste exhibited in the work displayed, I found the photographer was a subscriber to twenty-five dollars worth of art literature per annum, among which was the *London Art Journal*, the *Philadelphia Photographer*, the *Aldine*, and *Mosaics*. From these, and starting with a natural taste for pictorial effects and a love for his business, he has risen to rank *par excellence*, as the next exhibition will probably prove. Everywhere I find the skilled ones the reading ones; and they show it not only in their work, but in their manners and conversation. They are wide awake to anything which will advance them in perfecting themselves in their business. Some are getting rich, and many of them are in prosperous circumstances. Most of them acknowledge that the way was shown them through the study of photographic publications, and above all by the meetings or reports of the National Photographic Association or its annual exhibitions. Most are already members, and nearly every one of those not joined expressed a determination to do so.

"Friends, there is another side to the picture taken on the same trip: men doing business so ignorant of their work as not to be able to keep out of the fog over half the time. Some do fair chemical work, but pose only to expose their ignorance of all art principles, and even of the mechanical laws of their business, and who do not know enough of their business to explain intelligibly to their customers the answers to questions every day asked. Such cases, of course, are rare, but they ought not to exist at all in a business which assumes and is generally recognized as a fine art. May the grand army of progress induce them to join its ranks, with the hope that, by example and precept, they may be led to become members in mind as well as name. The west is bound to make a grand showing at Chicago, and we say to all, 'look to your laurels.' Truly yours, EDWARD L. WILSON.

## IMPROVED METHOD OF MOUNTING STEREOGRAPHS.

BY PROFESSOR CHARLES F. HIMES, PH.D.

NOTHING is more annoying to any one who has, with great care and interest, made a collection of stereographs, than to witness their gradual, almost inevitable, deterioration by use, and often to be obliged to see defects that put in an appearance on the choicest pictures run their course without possibility of being checked until not only the beauty, but the value of the picture is impaired. No care in assorting, and arranging, and packing away in separate boxes, according to subjects, however it may reduce the handling required to find any picture that may be desired at any time, can prevent the wear and tear so injurious to this class of photographs. A book may have worn bindings, stained, and even partially effaced, leaves, but will only have its beauty impaired thereby, whilst its true, substantial value will remain. But long before a stereograph becomes unsightly to a casual inspection, or begins to show a loss in value, it may have lost some of that peculiar force and fulness with which it renders its account of any



subject in the stereoscope, under the combining and magnifying influence of the glasses of the instrument. This is not because the photograph is more tender or liable to injury, but because all points and specks of such pictures, however minute or apparently insignificant when viewed through the instrument, express much more than would be even suspected to be contained in a photograph. The dots may be removed from all the i's of a printed page, the letters may be defaced, words even half obliterated, and yet it may be completely read and understood; the deficiencies may be mentally supplied; but the stereograph owes its peculiar, almost magical power, to the unconscious, rapid combination of numberless apparently meaningless specks.

How many stereographs, on casual inspection without an instrument, present almost an appearance of meaningless, almost unsightly blotches of light and shade, and yet in the instrument acquire a force and beauty all their own. It is plain that any roughening or dimming of the surface of such a picture will rob it of more of its value than a similar treatment of one not to be subjected to such an examination; that there will be destruction of its wonderful wealth of details revealed by aid of the instrument.

But besides liability to mechanical injuries, the photograph is very sensitive to chemical influences; a creature of chemical reactions, a result of some of the most delicate and inessential operations of some of the most subtle of nature's agents, it seems to retain this sensitiveness to chemical influences, this subjection to agencies that do not in the least affect an engraving. No care in the preparation of it can relieve it from this liability to misfortunes peculiarly its own. Accidental touches with the fingers may, aided by atmospheric influences, originate a train of changes that will inevitably lead to the destruction of its beauty and effectiveness. As a partial preventive of the injury of the pictures from preceding causes, the revolving stereoscope certainly recommends itself; but it is expensive, cumbersome, and very limited in its capacity.

It seems strange, then, as the stereoscope seems now to have become something more than a novelty, and has its recognised place and value as a means of study and instruction, that something has not been done to remedy, if possible, the preceding evils, and at the same time render the pictures as easily consulted as books in a library. The old card stereograph holds its place just about as it came into the market with the first instruments. Attempted variations in size, even, have not forced their way into anything like general favour. And yet is there a form of photograph which wears a more unfinished, unattractive appearance than the stereograph, or is more unsatisfactory to handle? Now, at first, this form seemed most convenient with the form of closed box-stereoscope, introduced mainly through Sir David Brewster, into which the picture was slid. But with the almost endless variety of instruments now in the market, it would seem that a corresponding variety of modes of mounting the pictures might at least be attempted.

The writer, after suffering from all the inconveniences, especially for reference, entailed by the old and only form of mounting, during the growth of a collection of stereographs on various subjects for the past fifteen years, has adopted a plan which seems to relieve the pictures almost entirely from liability to injury from mechanical, chemical, or atmospheric causes, and yet permit of almost as ready reference to any particular picture as to the page of any book in a library, whilst the space occupied is, at the same time, much reduced.

A book is formed about three and three-eighths by three and a-quarter inches in size, with a dozen or more rather short guards, to which double leaves, the size of an ordinary stereograph card, are affixed, like maps in an atlas. Upon these leaves the stereoscopic pictures are pasted as on a card, and a slip of smooth, stiff paper laid on one, and the book closed and subjected to considerable

pressure—as of a copying-press—for a short time, or, still better, for several hours. Each book contains leaves enough for twelve pictures, and has a title-page and index-page in which the names and numbers of the pictures and of the negatives are placed, as well as of the series to which it belongs; as, for example, German series, vol. — No. —, &c. To examine such pictures the book is opened out and slid between the wire supports of an ordinary Holmes stereoscope, or into a box stereoscope with an opening at the top instead of on the side. The Holmes stereoscope is, however, preferable, and it is best not to open the book completely before inserting the edges in the wire supports, but to do so afterwards by gently pressing against the back of the book.

There are so few objections that suggest themselves to this mode of mounting stereographs, and so many advantages, that it might become an object with dealers to supply the general public with them mounted in this way, whilst for collections to be placed for public use—as books in a library—it seems specially adapted, since by suitable catalogues any desired one might readily be found and examined by a simple form of instrument placed near at hand. The range of subjects—scientific, architectural, mechanical, artistic, &c.—susceptible of illustration in this way would doubtless soon be added to. Instead of having such pictures already pasted in books, dealers might simply have them mounted on flexible cards, which could readily be folded and affixed to the guards of a proper book in a few minutes. Leaves of thin paper might also, if desirable, be affixed to extra guards, on which fuller descriptions, &c., could be written.—*Photographisches Archiv*.

#### M. CHARDON ON THE COLLODIO-BROMIDE PROCESS.\*

For some time past the preparation of dry plates has been studied on many hands. Every one has his own ideas on the matter, and numerous processes have been brought forward which are very similar to one another. The plan of preparing plates with bromide of silver in suspension in the collodion, a method known under the name of the collodio-bromide or emulsion process, differs from other systems, and, before giving it the preference, we shall do well to consider in what its real value lies. To do this, it is necessary to enquire into the nature of the qualities which dry plates should possess. Thus they ought to be:—

1. Easy of preparation.
2. Require but a brief exposure.
3. Possess good keeping qualities.
4. And develop within a reasonable time.

I shall not lay any stress upon the two first conditions named, but will say a few words on the subject of development. I believe, and this is but a personal opinion, that the image should not be very long in coming out, and by this I mean that the picture should present itself in all its details, whether it is of a weak or vigorous nature? If an acid solution is employed, the development will be rather longer than when an alkaline liquid is used; and here I beg to call attention to an important point, which is that developing and intensifying are often confounded. The development, as I have just said, should bring up the image in every detail, while the intensifier should only be resorted to to give the cliché a little better effect. It is by reason of this confusion that pictures of a hard character are so often obtained, the development not being complete before the operator has proceeded to intensify. I will add, moreover, that intensifying is by no means indispensable, and that a cliché which has never been submitted to the operation will be always much more harmonious, and yield a far more perfect print.

With alkaline development, which I habitually employ, I have no need to intensify my image, but in order to do

\* Read before the French Photographic Society.

this an excellent preparation is necessary, which is opaque, and which gives sufficient opacity to the image.

If now we examine the emulsion process, I find that in the preparation of plates it is superior to all others as regards the simplicity of the operations. As regards the exposure required, I do not share the opinion generally expressed that very short exposures are necessary. On the contrary, I have found that the period required is two or three times as long as that for plates sensitised in a bath. M. Stuart Wortley has obtained results in two or three seconds; but under what circumstances? It is only by forcing the development, and continually renewing the solutions; and then he obtains but weak images, which require as much time again to be spent in intensifying them as was previously necessary for their development. I have heard that the plates now purchasable in commerce under the name of Stuart Wortley plates possess good qualities, but those who have essayed to prepare them from the published formulae have not succeeded. We must conclude, therefore, that the process has been brought forward more especially as a commercial speculation.

Coming back to my subject, I affirm that a lengthy development of this kind is not practicable, and that if it succeeds in certain hands it is, nevertheless, not within reach of all of us. M. Stillman, at the last meeting of the society, had the honour of submitting to your notice some clichés and a formula for preparing emulsions. I have prepared some plates with the collodion he placed at our disposal, and I regret to say that I have not been successful with it. I found in this preparation the defects which I have just indicated. May be, the collodion had undergone a change; may be, I have been unskilful; but, at any rate, I have failed to obtain anything. The collodion is extremely fragile, and, as you may see, the film could not be preserved intact. Wishing to make some comparative essays, I took two negatives with some plates that I had kept by me for a period of three months. These plates had been prepared by M. Stebbing, and they received an exposure three or four times less, and yet gave good clichés, without any intensifying at all. I do not wish it to be considered that I am praising M. Stebbing to the detriment of others, and I ought to say that I myself have never had an opportunity of preparing plates according to his formula.

## THE TRANSFER OF VARNISHED NEGATIVE FILMS.

BY KOCH REICH.\*

For the purpose of peeling off the film from a varnished negative I prepare in the first place a mixture composed of the undermentioned material, viz.:—

Gelatine	...	...	...	60 parts
Acetic acid	...	...	...	90 "
Water	...	...	...	180 "
Ordinary soap	...	...	...	$\frac{1}{2}$ part

The above ingredients are mixed together, and then poured rapidly over the varnished film in such a way that every part of the surface is uniformly covered, and no portion treated a second time. The superfluous liquid is poured off and thrown away, for it cannot be employed again for the same purpose.

The film is then allowed to dry, and, when perfectly desiccated, some thick normal collodion is poured over it, to which a little castor oil has been added. This leather collodion, having dried uniformly over the negative film, will be found capable of being peeled off, bringing the collodion image with it.

Should the film, when separated from the glass, lack thickness, and it is desired to secure the cliché film of a stouter and more compact nature, the same may be treated with a solution of gelatine (without soap) after the leather collodion has been applied, and even with a second application of collodion if such is deemed necessary.

By employing this simple plan of proceeding, I may

mention that I have stripped upwards of a hundred negative films from glass, all of which had been previously varnished, without having had a single mishap. They were from plates prepared by the ordinary wet collodion process; but whether dry plates (and especially those which have been prepared with a substratum of albumen) could be so readily treated, is a matter of which I have no experience at present.

## PHOTO-SPECTROSCOPIC RESEARCHES.

BY PROF. H. VOGEL.\*

A SHORT time back I gave an account of some photographic experiments I had made with the spectrum.† After I had succeeded, as there detailed, in discovering a method of rendering bromide of silver strongly sensitive to coloured rays, which, in its ordinary state, affected the salt but little, I tried other colouring matters and silver salts to ascertain their behaviour likewise under the influence of the spectrum.

These experiments were, it is true, performed at a very unfavourable period of the year; but they yielded a series of results which supplement very materially my earlier observations. In the first place, I found that pure bromide of silver was sensitive for all colours of the spectrum: for some, as a matter of course, more than others. The maximum sensitiveness lies between *h* and the point  $G\frac{2}{3}$  F, by which, according to Bunsen, I mean the spot two-thirds distant from the lines *G* and *F*, reckoning from *G* (see fig.). From there towards the red it gradually diminishes, and the diminution is more rapid towards the ultra-violet, the action being different at different times.

In the figure, line No. 1 shows an image upon pure bromide. In the sketch the spectrum lines are shown as perpendicular lines at the proper distances, and the wavy outline upon the horizontal line No. 1 indicates that the sensitive action in red begins at *B*, gradually increasing until it becomes most powerful in the indigo, and quickly diminishes in the violet. If there is the slightest trace of any light absorbing body mixed with the bromide of silver its action is at once apparent, showing at the point of the greatest absorption, also, a stronger photographic action, which is at times only observable in one line. Foreign matter of this kind is not unfrequently met with in commercial samples of collodion, serving as basis for the image. The spectroscope betrays the presence of these substances, the amount of which might be so small as to baffle chemical analysis.

I found, on further investigation, that with coloured bromide of silver the point of the greatest absorption of the colouring matter did not coincide accurately with the point of the strongest photographic action. I remarked, indeed, that the point where the strongest action took place was rather nearer the red than the absorption point of the colour. This circumstance cannot be wondered at, as the chemicals which come into play exert some influence, and the absorption power of the collodion film and bromide of silver also have their rôle to perform.

Of particular interest was the behaviour of chloride of silver. Pure chloride of silver plates compared with bromide of silver were found to be highly insensitive. Where bromide of silver gave a very vigorous representation of the spectrum from *H* to beyond *D* in fifteen minutes, chloride of silver yielded not the trace of an image with the same exposure. It was only after the exposure had been prolonged to thirty-eight and a-half minutes that I obtained any impression at all upon the chloride. This was most visible between *G* and *E*, left off in the middle between *g* and *h*, and continued gradually lessening to the other side into the red, so that line *B* was just slightly visible (see No. II line, in fig.) To judge from this one experiment, the sensitiveness of the pure dry bromide is much more comprehensive than that specified

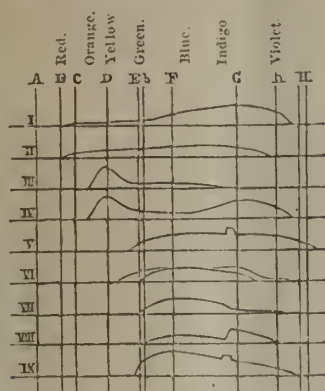
\* Photographisches Archiv.

\* Photographisches Mittheilungen.

† See PHOTOGRAPHIC NEWS for 12th December, 1873.



by Schultz-Sellac for moist chloride of silver. Schultz found only sensitiveness between the ultra-violet up to line II; but, according to the experiment just referred to, the sensitiveness extends through the whole spectrum.



Very remarkable is the behaviour of red chloride of silver. This showed itself to be the most sensitive in the yellow, a vigorous line being produced at D. The sensitiveness rapidly diminished both towards the violet end, where it extended to G, and the red end, where it ended at C (see No. III line in fig.). Thus, red tinted chloride of silver showed much greater sensitiveness than the pure chloride. Whilst the latter required an exposure of thirty-eight minutes to give a marked impression, the tinted compound gave a vigorous mark in the yellow within fifteen minutes. Chloride of silver tinted red would, according to this, be the ideal of photography. For ideal photography, which should reproduce reality—or, in other words, the tones in their comparative brightness should reproduce yellow as the lightest, then red and green, and then blue, which is to be classed with the darker colours. This is what the red tinted chloride does in fact, and if it were only more sensitive, it would be unquestionably the finest material for photography.

Red coralline bromide of silver is much more sensitive, but does not come so near to ideal photography, for it reproduces blue quite as brightly as yellow. I tried to employ a mixture of the two bodies. The red chlorobromide of silver gave a result half way between red chloride of silver and red bromide of silver. The compound showed itself to be most sensitive at D; from thence the action diminished very rapidly towards red, and ended 6 millimetres from D. Towards blue the diminution of sensitiveness was less rapid. Between F and G in the middle the sensitiveness again increased, and reached a second maximum near G, reaching to h, when it diminished rapidly, and disappeared 4 millimetres further on. (See No. IV line in fig.) The only gain, therefore, resulting from mixing the chlorine and bromine was an increased sensitiveness in the yellow, which, however, did not appear of sufficient importance to warrant the matter being carried further.

The examination of the iodide of silver furnished interesting results. Pure and dry iodide of silver showed a considerable sensitiveness for violet as far as green (H'—b.), then the action suddenly ceased, but could be traced in the red for two millimetres beyond B. Here also there was a much more widespread sensitiveness indicated than experiments hitherto made had shown. Bromo-iodide of silver behaved in a peculiar manner. An ordinary wet plate showed on the 29th October, with an exposure of ten minutes, at 3 h. 6 m. p.m., a very vigorous action at G, for here a most marked line was produced; the action remained pretty uniform until line E, and was lost in the middle between D and E. Towards violet the action only went two millimetres beyond H (see No. V line). A much more notable action was obtained on the 7th November, when the sensitiveness extended into line

D, and on the other side until 7 millimetres beyond H. I make this remark only to prove that on different days the action of the light is different. In general the action is the most vigorous between h and F, and the maximum action lies 2 millimetres from G towards F, when the elevation in line V (see fig) is shown. By reason of this difference in the action, it is necessary that the comparative results be made at one and the same time.

Washed wet plates behaved quite differently to the bromo-iodide of silver plates with nitrate of silver; the strong line at G was no more to be seen, but instead, there appeared on development a brown band about G, which in different experiments appeared of unequal intensity and breadth, and very near appeared the other part of the picture in pure blue. On the 30th October, 1873, I obtained a picture which began in E, was most vigorous at F, and diminished towards G, and disappeared before H (see line No. VI). On the 1st November the action extended into the yellow, and on the other side to II, and was more vigorous at G, as the dotted line shows.

These experiments show the great influence of the sensitizers upon the film.

A washed and dried collodion plate behaved again differently, for its sensitiveness first began in the violet at h, (13 m. from G) then diminished until 2 m. beyond G; then began a very vigorous action, which reached nearly as far as c (1 m. from E). Immediately beyond E the action disappeared (see line VII in fig.)

A tannin plate of the same kind of collodion was then tried. In this a vigorous action from II' to 2 m. beyond G was shown. Then it became suddenly weaker, and lasted till near E. At E the action was a little stronger, although still very slight, and it disappeared near D. Other tannin plates gave a similar result, only the action went more or less in the direction of the violet, or the red, according to the intensity of the violet and red rays.

Singular was the behaviour of red tinted bromo-iodized collodion. As a dry plate it gave a result such as shown at line VIII. The strongest action was at G, then it suddenly diminished, and again became more marked near F. Exposed wet with nitrate solution, the result was totally different (see line IX). In this case the greatest amount of sensitiveness was in the light blue at F, and diminished towards the dark blue and violet, appearing again vigorously near G. This red bromo-iodide of silver, when moist with nitrate solution, is more sensitive, therefore, to the less, than to the more, refrangible rays. As may have been seen in the illustration, however, in no case with portrait collodion was there any sensitiveness in the yellow and red. It is obvious that the colouring matters added to collodion would soon get into the nitrate bath, and the latter would soon show the effects of organic contamination.

The following conclusions may be drawn from these experiments:—

1. Bromide, chloride, and iodide of silver are sensitive to all the colours of the visible spectrum, but least so in the ultra-red rays.
2. Chloride of silver coloured with coralline shows most sensitiveness in the yellow.
3. Coloured bromo-chloride of silver shows a sensitiveness midway between that of its coloured component parts.
4. Bromo-iodide of silver with nitrate solution (the ordinary wet plate) is most sensitive at line G (dark blue). The sensitiveness diminishes slowly to green, and quickly to red.
5. Washed wet and dry bromo-iodide of silver shows itself very sensitive for light blue, and less sensitive for dark blue and violet.
6. Dry red bromo-iodide of silver is more sensitive for dark blue than for light blue.
7. Red bromo-iodide of silver with nitrate of silver solution shows most sensitiveness in green and light blue, less sensitiveness for dark blue, and least for violet.
8. Tannin preservative increases the sensitiveness of bromo-iodide of silver for violet, but not for blue.



# The Photographic News.

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## ELIMINATING HYPOSULPHITE FROM PRINTS.

WE have been favoured by Dr. Anthony with some interesting illustrations of the results obtained by the use of acetate of lead for eliminating the final traces of hyposulphite from the silver print. The method in question has been referred to of late, for distinction, as Mr. Newton's method, that gentleman having revived the plan about a couple of years ago, and brought it prominently under the attention of American photographers. Dr. Anthony's experiments with the lead salt belong to a pre-collodion period of photographic history. The use of acetate of lead, and other salts having a similar reaction upon hyposulphites, has been, as old photographers know, often suggested, and occasionally tried, the aim generally being to oxidize the traces of the unstable hyposulphites of soda and silver lurking in the prints, and convert them into harmless sulphates or acetates. Besides the lead salts, various other agents have been suggested and tried. Dr. Angus Smith suggested peroxide of hydrogen, Mr. Hart suggested hypochlorate of soda, Mr. R. D. C. Tichborne proposed chlorate of barium, Dr. Vogel proposed iodine. From a variety of causes, none of these have come into general use. Their use seemed to involve a certain trouble, and an uncertain advantage. In very few instances, indeed, have any of the methods received systematic trial with a view to compare their results with those produced by simple washing after the lapse of a few years. The committee formed in New York for that purpose reported, as we announced last week, unfavourably. Dr. Anthony's experiments are very interesting, inasmuch as they possess the especial value which lapse of time can give as a full means of testing. The prints he forwards for our inspection are certainly not faded, so far as that term implies partial effacement of the image, but they are slightly tinged with the sulphur hue in the whites. The plain paper prints are less changed than those on albumenized paper, giving further colour to the suspicion that the albumen is answerable for much of the instability of prints on albumenized paper. The plain paper prints are of a purple-black tint, and do not appear to have lost anything of their pristine vigour during the quarter of a century which has elapsed since their production. The albumenized prints are of a somewhat peculiar tint, approximating to mauve, the whites of a pale primrose tint. How much change they have undergone we cannot say. On the whole, the influence of the acetate of lead does not appear to have been injurious, but probably useful in Dr. Anthony's hands. Of the two other individual experimentalists who have recorded results, both have been favourable. Dr. Maidstone Smith, last year, gave us de-

tails of some trials made upwards of a twelvemonth previous, which were favourable to the lead salt, and Mr. Gregson stated last year a similar experience. On the other hand, a committee appointed by a society to test carefully, find that the prints so treated really change more than prints produced under similar conditions washed in the ordinary manner. The difference in experiences is probably to be accounted for by some difference in treating the prints after the application of the solution of lead salt. In the reaction which follows the immersion of the partially washed prints in the acetate of lead solution, sulphate of lead and acetate of soda are formed; and it is important that a very thorough rinsing should follow, for if any trace of the sulphate of lead be left in the texture of the paper it would certainly turn yellow by contact with the traces of sulphuretted hydrogen generally present in greater or less proportion in the atmosphere of large towns. Hence, unless care were used in washing the prints after the eliminating process, the very operation intended to remove unstable and deleterious hyposulphites might introduce another element scarcely less deleterious. Dr. Phipson suggested the introduction of one per cent. of nitric acid into the washing water after the eliminating treatment, to remove the risk it involved, and in further experiments this precaution may be worth trying. In the meantime we think that more reliance is to be placed on thorough and short washing, employing some mechanical aid to the removal of the hyposulphite, such as sponging or pressure, than upon methods of decomposing the final traces of the fixing bath, which may cling to the prints after inefficient washing.

## WATER IN COLLODION.

THE addition of water to a horny, repellent collodion has been practised for years with advantage; and, as we pointed out last summer, the free use of water in collodion, for subjects requiring long exposure in hot weather, is the best means of avoiding stains from the drying of the film. In the course of a discussion at a recent meeting of the Photographic Section of the American Institute, the addition of water to collodion was recommended as a means of obtaining increased sensitiveness. Mr. Gardner, referring to the subject, said:—

"I believe it is a mistaken idea to avoid the entire use of water in collodion. I had taken the greatest pains to get the best alcohol to make my collodion, but found it was not working very well, when an operator, looking at one of the negatives, suggested that I should add some water to the collodion. I added the water, so that it threw down a small quantity of the cotton, which redissolved again; then I tried it, and found it to work very satisfactorily. Since that time I have believed that a small quantity of water is not objectionable in collodion. When I used the iodide of ammonia and the bromide of ammonia instead of using alcohol, I dissolved them in water and passed them through an ordinary filter into the collodion. I have never found any mode of making collodion so quickly as by preparing it simply with water." Another member, Mr. Mason, said: "Twenty years ago we used to be very careful about getting water into the collodion. Two years ago, when a discussion came up here, I remarked that I had tried the experiment of adding to twenty ounces of collodion four ounces of water. The collodion was made with ninety-five per cent. alcohol and ether equal parts. I dissolved my salts in water, using potassium principally, and continued to add water until I had added four ounces." Further testimony was given by Mr. Chapman, who said: "I had some collodion, a short time ago, which was very rigid and worked very slowly. I thought I would add a little water to see if I could not make it a little tender. I did so; and it improved the sensitiveness nearly a third. It seemed to be as open and porous as the best collodion I had, while the cotton was absolutely good for nothing for my work without the water. When collodion is tough, I think by adding a little water to it, it may be improved very much."

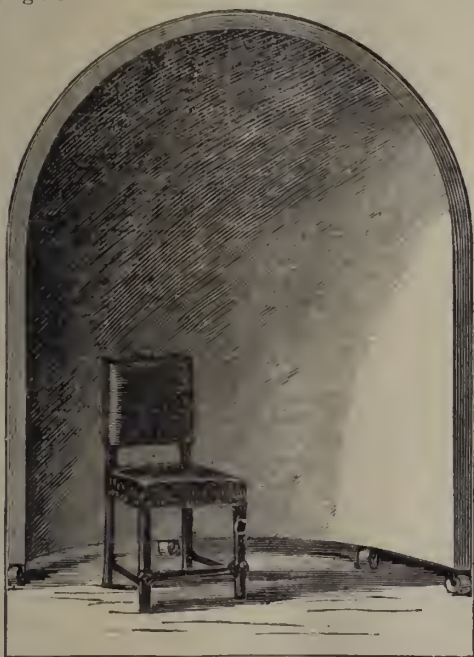
In adding water, it must be done with great care; we have found a couple of drops in an ounce of collodion make a great improvement. It should be added a drop or two at



a time, shaking the collodion meanwhile. It is better to add too little and try, than to add too much, as that is difficult to remedy. The effect of too much is to make the collodion glutinous, yielding an uneven and crapy film. It is a good plan to experiment upon part of a stock of collodion, so that if by chance too much water is added, the fault may be remedied by adding more collodion.

#### A FEW BACKGROUND HINTS.

WE cull, for the benefit of our readers, a few hints on backgrounds which have recently appeared in various pages. They are not strictly new, but they all possess some points of novelty to be of possible service to some portraitists. The first is contributed to our YEAR-BOOK by Mr. A. Asher, of Edinburgh; and we reproduce it here for the special purpose of illustrating it by an engraving which was not ready in time for the pages when we first issued it. Mr. Asher describes it as valuable in all kinds of portraiture, but especially useful for pictures in which effective light and shade are employed to produce the results which photographers term "Rembrandts." Here is the figure.



Mr. Asher's description is as follows:—

"The framework, of wood, is circular-shaped, arched across the front, and dome-shaped from front to back of top circle. The dimensions for bust or three-quarter portraits may be about six feet wide in front, two feet deep in middle of circles; height four and a-half feet at sides, and six and a-half feet at top of arch in front. Any joiner can easily design and make the framework. Thin laths similar to those used in Venetian blinds, and which are easily bent to the dome shape, are nailed close together on to the framework, any inequalities being easily pared away. When the laths are all fitted and nailed down, give them a coat of strong glue size, which allow to dry; then cover over with cotton cloth, not too thick, using strong flour paste both on the cloth and over the laths. Lay on the cloth as smoothly as possible, taking care not to let the edges of the cloth lie upon the joinings of the laths. When dry, give a coat of oil paint, any suitable colour (the paint assists greatly in binding the cloth and wood well together). When the paint is dry it may be size-coloured to any shade desired. If one coat of size

does not cover solid, give another, having as much glue size in it that it will not rub off with the finger when dry. A few large castors screwed to the bottom of framework render it very portable, a touch bringing it into any desired position. The trouble or expense of producing this 'meh' background will never be regretted by any one adding it to his accessories."

In the *Photographer's Friend* (published in Baltimore) we find a somewhat similar background, with an addition of side screens and reflectors. Here is the figure.



The inventor, Mr. F. Waller, gives the following hints for making such a background:—

"In the first place there is a circular platform of five feet diameter and ten inches high, neatly carpeted, on large rollers, and provided with handles for running it about. The background frame is seven feet high, and is exactly half of a circle five feet in diameter, so as to fit closely around the platform. It has three rollers, one at the centre and one on each side. It is not attached to the platform, because it allows of greater freedom detached, though they will both move easily together. At each side of the frame is a hinged skeleton door, in which is an upper and lower swinging screen controlled by thumb-screws. These doors are two feet wide, and extend from the top of framework to the top of platform, clearing it so as to swing in or out. The woollen background—cloth is used, of light colour—in stretching it draw only from the top and bottom, when it will take the form without wrinkles. It should be rendered opaque by being covered on the back with dark muslin. The side screens are covered with white muslin only. The side screens may be used as light screens, to cut off or soften the light, or as reflectors to the shadow side. By the double arrangement the full flood of light may be directed upon the face, and the lower part screened. This is a great advantage for light draperies; for very black draperies they may be reversed."

In the *Philadelphia Photographer*, L. M. Whitney describes his mode of making a circular background, which, he says, is light, cheap, and useful. He writes as follows:—

"Take two pieces of bent felloes for the hind wheel of a buggy; spring them out so that they will span about five feet; ten on the ends for the corner posts; let the posts run past one inch; frame strips in between once in six or eight inches; take the heavy brown paper for sheeting up buildings; tack on inside two thicknesses, breaking joints; now take thin brown paper, and glue strips over the last joints; mount on four table castors; paint one coat of lead or brown, and it is ready for use. Cost, one half day's work, and \$2 for stock. Is very light, and easy to handle."

In the same excellent journal Mr. T. C. Harris describes another background of the same character, also easy to make at home. It is as follows:—

"A good cheap background for 'Rembrandt' heads can be made by gluing together three or four layers of paste-

board, so as to make a large heavy card about five feet square. This is to be cut into a perfect circle five feet in diameter. Over one or both sides of this paste one thickness of common muslin; when dry, cut out of this circle a triangular piece with the point of the triangle exactly in the centre of the card. The base of this triangle will be at the edge of the circle, and the width will govern the concavity of the background when finished. Now bring the edges of the cut together, giving sufficient lap, and rivet firmly with ordinary copper rivets placed about two or three inches apart; around the edge of the whole tack a wooden hoop to give stiffness. Afterwards paint the desired shade on the inside, and mount on a light wooden frame or an old head-rest. This makes a very good substitute for the ready-made grounds, and is especially recommended to those whose supply of 'stamps' is not sufficient to buy one."

#### ACETATE OF LEAD FOR REMOVING HYPOSULPHITE FROM PRINTS.

BY JOHN ANTHONY, M.D.

As a supplement to the interesting experiments lately made in New York on the effect of soaking prints in a solution of acetate of lead subsequent to their treatment with hyposulphite of soda, I am fortunately enabled to supply some valuable evidence of the effect of time—about a quarter of a century—on prints so treated with the lead salt. The specimens I sent to our worthy editor for his criticism were taken and printed from some two or three years before the invention of collodion, which, of course, fixes the date sufficiently near. Negatives at that time were necessarily taken on paper, and occasionally the paper negative was well waxed to make it transparent, and to as far as possible get rid of the texture of the paper, which was apt to appear in the print. I send negatives of each kind, and prints taken from them at the early period of the art I mention. Some of the prints are on plain paper, and some on paper slightly albumenized. It was usual in that day to print on plain salted paper by the process known as of Blanquart Evrard, that is, by ammonio-nitrate of silver; and the toning was invariably done by old hyposulphite solution—the richer in silver the better. It will be seen that the two prints so printed and toned have kept very well, and only one print shows three spots of the characteristic deterioration. One print on plain paper of the same subject, and from the same negative—the Egyptian head—was soaked in a solution of acetate of lead after it came out of the hypo. It will be known by its appearing rather purple than brown. For a long time these lead-treated pictures retained the tone they gained in the lead solution, viz., a delicate lilac—not an unpleasant tint. There is rather a yellowing of the whites from age, but, as will be seen from comparison with the negatives, no great amount of general fading. So far as I remember, it was imperative to print these specimens, which were intended to be "leaded," deeper than the others, as the acetate solution appeared to reduce considerably.

I must say that the prints did not behave as I expected. I was prepared to find them darken under the influence of sulphur and lead, but, as will be observed, they were rather bleached. Heaven knows what the chemical change was. The treatment was terribly empirical, and we were not in that day very particular about the strength of our solutions; but one thing we did very conscientiously, and that was, to wash the prints very thoroughly, whether taken at once from the "best hypo," or treated subsequently with this said solution of acetate of lead; and perhaps this may account for (I think I may say) the good condition in which these early photographs appear, with no special care used in their conservation.

I have no time to experiment further in this direction,

but I shall be happy to answer any questions on the matter, and to show the time-honoured specimens which remain to me fully illustrative of the point at issue.

Washwood Heath.

#### DESCRIPTION OF A PHOTOGRAPHIC STUDIO.

BY SAMUEL FRY.\*

I HAVE with much pleasure consented to the wish of your worthy secretary that I should read a paper before you.

For some years the South London Photographic Society has, in a very praiseworthy manner, made the furtherance of the art qualities of photography its leading feature, and none can do otherwise than admit that this has been of very great advantage to the commonwealth of photography.

Early in last year I built the studio of which a model is now before you. For the previous ten years I had satisfactorily worked in one; but at that period, owing to the unexpected erection of a large building immediately adjoining, my light was so completely taken away that I had no option but to build another. Fortunately, the extent of the land on which the house stands enabled me to do this.

The change in public opinion of photography, showing an immediate appreciation of art qualities, and subtle effects of lighting, determined me to erect a building capable of giving a great variety of light with promptitude in the changes. You will remark that the side-light is low—six feet only—and prominence is given to a large roof light, combining the united influences of side and top-light, of which the proportions may be indefinitely varied according to the form of the sitter's visage. Either end is available, and a very slight change in the blinds only is necessary to secure the full results.

The aspect is north, slightly inclining to east. During the summer months the early sun, up to about half-past nine, shines in, and it is then clear for the rest of the day. The height of the roof was designed from careful calculation so as to just exclude the midday sun on the longest day, and the result has been exactly achieved. Had the roof been any lower it would have required an external blind running along the ridge to do it.

On the side lights I use no blind, employing instead large, light folding-screens, covered with dark material, and having the outer leaf or fold of the screen covered with transparent muslin; by manipulating this screen between the sitter and the light a great variety of effects are very readily obtained. Nothing of this kind is obtainable with blinds, unless in very peculiar aspects.

I now ask your attention to the square window in the north wall. This is of ground glass, was especially made to produce Rembrandt effects, and is very successful. This is a model of the large screen at the end of room, which covers up the window when not in use. One side of the screen is covered with a lightish-brown cloth, in one piece, and the other side with a French grey. This latter is used for vignettes. By the way, I may here remark how very often we find vignettes taken on a dark background. Nothing can be worse, leading to dark patches over the head and shoulders, and the delicate outline of the hair is lost or becomes indistinct. The beautiful vignettes of the late Mr. F. R. Williams, and those of Mr. Reutlinger, were taken on lightish-grey screens.

When we wish to take a Rembrandt picture the screen is turned at an acute angle to this window, with the lighter side inwards, thus tending to mellow, by a gentle reflection, the tendency to extremes of lighting. By this system the camera is placed in or near the middle of the room, and the screen is so made as to cut off the light from the window from the lens. A large variety of effects are here produced, and a reflection of grey paper is often wanted to prevent masses of extreme shadow on the off side. Pictures produced at this window are the favourites with the public;

\* Read before the South London Photographic Society.



the choice of the usual set of four poses being generally for the largest number from this negative. Necessarily a prolonged exposure is required, which is still further increased if dark dresses are worn. This, however, you cannot help.

For another class of pictures, of which an example is before you, having a considerable proportion of the face in soft shadow, but with less vivid or decided effect than is produced at this window, I place the sitter near the middle of the room, and with one of the large screens drawn pretty closely up, I manipulate until this effect is seen. The camera is at a rather acute angle to the light, and will, therefore, need to be carefully shielded to prevent fog. This system does not require an appreciably longer exposure than with ordinary lighting. For ventilating there are two louvers, each two feet square, movable by a cord from within. They, without admitting light, speedily cool the upper part of the studio in summer, and, as the side lights lift completely away, the interior is kept very cool, entirely free from the close and noxious feeling of closeness so common in studios. For warming in winter, pipes pass round the studio, near the floor, and through the other rooms used for business; also through a cupboard, which forms a hot room for warming baths and solutions, drying plates, &c. Thus the extremes of temperature, so trying to photographic operations, are, as much as may be, neutralised, and this seems to complete the set arrangements devised for this studio. Equally complete, with as many novelties, and as successful in working, are the arrangements for enlargements and also for printing.

#### REMARKS ON THE ENLARGEMENT OF NEGATIVES BY THE WET PROCESS.

BY J. POLLITT.\*

It is with considerable diffidence that I appear before you to-night on the subject of enlarged negatives, following so closely on the heels of Mr. Brier, whose able and well-delivered remarks interested us all so greatly at the last monthly meeting. True, I had intended at some future meeting to bring before you some results of my own attempt at enlarging, but had not the slightest idea of doing so on this particular occasion until within the last few days. It was then made known to me that Mr. Coventry would, in consequence of absence from home, be unable to fulfil his promise of a paper for to-night, and that, therefore, the gap thus created should in some sort be filled up.

The principle of making small negatives, and afterwards reproducing them on a greatly enlarged scale, is one which promises so immensely to lessen alike the toil of the amateur and professional during a summer campaign, that it is not to be wondered at that so much should have been said and written in its favour, and so many experimentalists should have devoted their attention to its more complete development. But the idea of going out with a small satchel camera and plates of 4 by 3, or thereabout, and, by a second operation conducted quietly at home, enlarging them to the extent of four diameters, instead of the heavy 12 by 10 or 15 by 12 apparatus, and its concomitant weight of glass plates, is in itself so fascinating that, supposing the results thus obtained should fall somewhat short of the intrinsic excellence of a large direct negative of the highest quality, taken with a lens of long focus, there is a temptation to look upon it with some degree of favour.

I am, however, inclined to think that it is at present an open question whether, by having a small negative of sufficient merit, an enlarged one made therefrom may not, in some respects, be better, and optically more perfect, than a large direct negative, taken with a lens of great focal length; for it is well known that when a lens of short focus is used, all objects beyond a certain distance from the camera—that distance being determined by the focal length

of the lens—are, for all practical purposes, equally sharp in focus. You will doubtless perceive this in many of the examples I have with me to-night, being enlarged from negatives made with small lenses; whereas with a lens of long focus it would be absolutely impossible to get objects in so many different planes of distance of equal sharpness with these examples. Generally, the only approach that can be made thereto is by the trick of swinging the plate either vertically or horizontally, and sometimes both.

Thus, the optical conditions being theoretically more favourable to the enlargement method, it remains to be seen whether skilful manipulation can bring about a successful issue. Of course there still remains the difficulty of roundness of field, which is more or less the weak point of all lenses. You will, no doubt, detect some such remissness of marginal definition in some of these examples; because when such failing exists in the small negative the evil is, of course, greatly intensified in the subsequent enlargement. I do not know whether it will ever come within the scope of optical science entirely to overcome the difficulty; but in the best made objectives the evil has been reduced to such a degree of insignificance that, when all needful precautions are taken, it ceases to become a very serious objection, and where everything else is so good I should not be disposed to find fault.

Whilst some differences of opinion exist as to the best process for the production of high-class enlargements, the importance of working from a transparency of unblemished excellence is universally admitted; but of the many methods by which that transparency may be made, only two may be fairly said to lay within the scope of the members of this society, viz, the printing of the transparency by the superposition on a dry film of the original negative, or the printing from that negative by means of lens and camera on a wet collodion film. The former of these methods was ably dealt with by Mr. Brier at the last monthly meeting, and the excellent examples he brought forward on that occasion are quite capable of holding their own when brought into competition with anything I shall be able to show you to-night. It is, therefore, from no captious spirit of rivalry that I appear before you as an advocate of the wet process, but rather to help on the already mooted inquiry as to the best process.

If the nature of the transparency is of paramount importance, so also the nature of the small negative is not a whit less important; for it is here where the utmost skill and most artistic judgment are demanded. It is not sufficient that it be of average excellence, but it should be of marvellous perfection, and as microscopically sharp as it is possible to get with the best lens up to the very corners of the plate. It should be photographically thin, i.e., too thin for good paper printing, well exposed, and full of detail; for in an under-exposed plate, forced up by prolonged development, the film presents a coarse, granular effect under the microscope, which, however well it may answer for paper printing, will never make a respectable enlargement. I also prefer the negative unvarnished.

Several of the examples I have brought with me to-night are produced from Professor Piazzi Smyth's beautiful negatives of the Great Pyramid, taken in 1865, and kindly lent to me by him for the purpose of making myself a set of lantern pictures from them, and also with the further privilege of publishing such copies at discretion.

These negatives were taken with the greatest skill and care, chiefly for the purpose of printing transparencies for the lantern, the camera in every instance being carefully levelled with a spirit level, and tilting being always scrupulously avoided, thus securing the more perfect freedom from distortion. Their general excellence is such that, I venture to say, they will not suffer by comparison with the very best works of the best living photographers. I have brought with me some of the transparencies from which the enlargements have been made. I cannot let you see the negatives themselves, even were I at liberty to do so, for they have

\* A communication to the Manchester Photographic Society.



never been varnished, and therefore would not be safe to handle; besides, I promised that they should suffer no deterioration in my hands, nor, in fact, be subjected to any risk; and that promise must be religiously kept. The average amount of amplification to which the pictures have been carried is about three and a-half diameters of the originals, some of them being a little over four diameters.

I may here remark that, although a negative may sometimes be amplified to the extent of six diameters with perhaps increased artistic effect, I do not think it advisable as a rule to increase to more than four diameters. The half of a stereoscopic negative will on this scale produce a good 12 by 10, and I think then our ambition ought to be satisfied.

The success of the wet collodion process for making the transparency depends largely on the use of gelatine in the iron developer, while it depends in part on the use of a collodion well ripened with age, somewhat thin, and not too rich in the bromo-iodide salts. I need say no more about the collodion, except that if, when the film is excited in the bath, it presents a dense and creamy appearance, it should be diluted with plain collodion and ether.

The gelatine solution used in developing is made by an old and almost forgotten method given many years ago by Mr. M. Carey Lea. I can give you the formula, although I have never actually made it myself; and for the stock I am now using I am indebted to Mr. Sidebotham, who gave me a bottleful about two years ago. As it had then been made some years previously, it was reported to be a fine old crusted sample. Whether or not age really confers on it some improving qualities I am not in a position to say. The method of making the solution, as given by Mr. Carey Lea, is as follows:—Add an ounce of sulphuric acid to three ounces of water, and set aside to cool. Then add to this liquid an ounce of good gelatine; let it swell and dissolve, placing it for that purpose in a gently-warm place, not exceeding blood heat, for twenty-four hours. Then add iron filings in excess, avoiding all application of heat; let it stand for several days. Finally, add a little acetate of soda, filter, and dilute to fifteen ounces. I believe it will be found necessary to dilute before filtration.

The above formula was given at the time as a new developer to be used alone, and I remember trying it in 1865 in conjunction with the late Mr. Petschler; but it did not then answer in our hands used alone, the development being exceedingly slow, and the films had, on drying, a most tantalizing habit of splitting into ribbons and curling up after the fashion of wood shavings, leaving the plate quite bare. The best results I have obtained in transparencies have been by a very sparing admixture of it with an ordinary iron developer of about twelve or fifteen grains to the ounce, using the gelatine solution in the proportion of about one drachm to two ounces of the iron developer; and such has been the plan adopted in making the transparencies from which these enlargements are produced.

I need hardly point out that the conditions demanded in such transparencies are, that the exposure shall be more ample, and the development carried on further, than is necessary in the production of lantern pictures. I have only brought with me a few of the transparencies; these will be sufficient to show the conditions desired in every case. I deprecate the use of varnish except on the enlarged negative for printing. The best transparency will be produced from a thin unvarnished negative, and such transparency in its turn (still unvarnished) will produce the best enlargement.

I have here a picture enlarged from a negative by Mr. Lund, and, I dare say, well known to many present, because it has been shown on the screen and recognized as a high-class lantern picture. It is from a varnished negative which has been used for paper printing, and, as a consequence, I do not think the effect is so good as the productions from the unvarnished ones, although the negative in itself is of equal excellence.

The safety of an unvarnished negative would, of course, be seriously endangered by contact printing, and besides this drawback, unless the best patent plate be used both for the negative and transparency, there are many chances against getting an absolutely sharp print; but, supposing every precaution to be taken in this respect, immunity from risk is not then always secured. Minute excrescences on the varnish will sometimes attach so firmly to the film of a dry plate, when brought in contact with the negative, that a separation cannot be made without utter ruin to it.

I think I have now sufficiently stated my case in favour of the wet collodion process as a means of producing enlargements, and I shall not trespass farther on your time than is really necessary.

I now come to the manipulation of the enlarged negative, and this is simply a repetition of the method used in making the transparency, with one or two slight modifications. I use a somewhat heavier collodion, also a stronger solution—say twenty grains to the ounce of iron solution—and half the modicum of gelatine solution. I also intensify with pyrogallie acid, acetic or citric acid, or both mixed, and silver after the ordinary fashion before fixing. I prefer, however, not to carry it quite up to printing density, but after fixing with cyanide of potassium to intensify just a little further with the pyrogallie acid and silver solution. This application, when judiciously performed, strengthens up the highest lights, and gives sufficient crispness to take away the flatness which might otherwise stigmatize the negative as a copy.

On the camera and lens arrangement I need not dwell, Mr. Brier having so clearly described it, and the arrangement itself being so exceedingly simple as to suggest itself to the most ordinary mind.

Of the various lenses spoken of, my own preference is decidedly in favour of the rectilinear of Dallmeyer, or the doublet of Ross, either rapid or wide-angle, for I have tried them both without satisfying myself as to which is the best; but in either case the best results will be obtained by using a lens which will cover well a larger plate than that from which the enlargement is made.

I have now endeavoured to give, with all the particularity that the limited time at my disposal has allowed me, an account of this method of enlarging. I had hoped, before preparing such a paper, to have done more actual work; so far as I have gone, however, the results are before you, and will, no doubt, be estimated according to their proper merits.

## PRECIPITATING SILVER FROM WASTES.

BY J. CHISHOLM.

It is a common practice with photographers to throw down their silver as a chloride. I prefer commercial hydrochloric acid in all cases in all solutions containing silver. I take hyposulphite solution of silver, for instance; I put hydrochloric acid in the solution, and it sets the sulphur free in half a minute. Pour in enough—it is cheap—and, as soon as the sulphur is set free, the chlorine acts upon the silver, and precipitates it as a chloride. The sulphur is set free as a yellow scum, which goes down by its own gravity. When the chloride of silver is formed, it falls to the bottom of the vessel at once with the sulphur. When that is done, stir it up thoroughly, and then decant the supernatant liquid. Then add commercial nitric acid with hydrochloric acid—it does not matter much what is the proportion—and the two acids combined will act very energetically upon the sulphur, which will rise and float upon the surface; then you can separate it from the chloride, and wash it as many times as may be necessary.

*Precipitation by Copper.*—Another process is to get pure metallic copper. I take a sheet of copper of a size the dish will hold, and clean it on both sides. I suspend that in the hyposulphite, and there is a galvanic action set up, which takes all the silver out of the solution, precipitation commencing on both sides of the copper as metallic silver.



When it is sufficiently accumulated there, it is likely to fall to the bottom of the vessel by its own weight. When it does not do that you can take a common spatula and clean it off. You can keep copper there all the time, and the process will continue all night, while you are asleep; you can take some of it out to find whether it is all down or not. Take a little in a test-tube and try hydrochloric acid with it, as before, and if there is silver in solution the chlorine will go to it, and you cannot separate them without re-dissolving with ammonia.

**Reducing Paper Waste.**—I make a strong nitrate of potash solution, then soak the paper in that thoroughly, let it drain and dry thoroughly, put in another batch, and dry it in the same way. When they are all perfectly dry, I burn it in a shovel, and the silver will be in the ashes. If you do not use the potash solution there will be a great deal of organic matter, and it will be difficult to get rid of it. If you attempt to burn the paper without it upon a shovel, there will not be draught enough to burn it thoroughly, and you cannot put it in a draught, because you will lose too much.

## Proceedings of Societies.

### SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting was held on the evening of Thursday, March 12th, the Rev. F. F. STATHAM, M.A., in the chair. The minutes having been read and confirmed.

Mr. SAMUEL FRY read a paper on "Glass Houses" (see p. 144) The subject was admirably illustrated by the aid of a wooden model, and small screens and backgrounds, which were placed in their various positions, as illustrating their uses in securing different effects. Some fine examples of the various styles, produced by different modes of arranging the screens and blinds, were also shown.

After a few words from the Chairman on the interest and usefulness of the paper, and a vote of thanks to Mr. Fry.

Mr. BLANCHARD said he thought Mr. Fry had gone on the right tack, to secure both rapidity of exposure and good results, in bringing the eaves to the side light, at a height of six feet, and securing a very acute angle for the roof. In that respect it was like one of the best studios he knew—that of Mr. Robinson—and it also resembled that of Mr. Hughes. In the studio of Mr. Robinson, as in that before them, the direct sunlight of summer middays was cut off by the acuteness of the roof angle. In Mr. Hughes's it was cut off by another narrower studio being built above it. The result of having such a studio was, that during three-quarters of the year it was scarcely necessary to touch a blind. He thought another improvement would be, to have a portion of the roof sliding off altogether, so as to admit light without glass at all. Glass in London was practically a semi-opaque medium, and its removal would shorten exposure one-third.

Mr. W. F. MORGAN had adopted that plan in his studio, and found it a great advantage.

Mr. BLANCHARD asked what was the average exposure in Mr. Fry's studio, say with a Dallmeyer's 2b, full aperture.

Mr. FRY said, take the average the year round, about ten seconds or less. In answer to another question, he said his studio was twenty-two feet long by fourteen feet wide.

Mr. HUGHES, in answer to a question, said he originally put Hartley's rough green glass in the roof, with a view to subdue to the top light. This was found in winter to interfere with rapid working, and was removed, and its place supplied with large sheets of patent plate. This effected a great improvement for winter working at first, but eventually, an accident having shown that this patent plate had become much yellower by exposure, they again returned to the rolled green glass, in which, when a change of colour occurred, it was fortunately for the better, the deep green merely changing to a bluish green. Instead of using two blinds only, like Mr. Fry, they used three blinds, one of them always being down, so that they only used two-thirds of the available light. As they worked at both ends, the blind was sometimes down at one end, and sometimes at the other. An acute angle in the roof had many advantages besides that immediately pertaining to lighting. It threw off the rain quickly, and so prevented leakage, and it allowed the rain readily to remove all dirt from the glass. There was a special advantage in

having the eaves low: ordinarily there was a dark portion, consisting of the top frame of the side light, the eaves, &c., just at the very point where the angle of light should fall on the sitter.

Mr. TULLY said the great difficulty of most photographers in large towns was, that they could not choose the position and character of their studios, but must make the best of circumstances as they found them. In his studio he found a great advantage in the use of sliding screens instead of blinds. These were covered with tissue paper, which was easily renewed. He had one of these screens covered with black linen, which would cut off all light. He also found it best to have glass on both sides, and secure shadow by the use of screens.

Mr. HARMAN had built his studio with glass on both sides. He could shut it out when it was not required, but as professional portraitists were called upon to take sitters in all weathers, it was desirable to have the power of admitting as much light as possible. It allowed him also to take Rembrandt portraits all round his studio, admitting or stopping out light from any point he chose. Sometimes he found an advantage in opening the blinds during a portion of a sitting, having previously cautioned the sitter not to be disturbed by such a step.

Mr. HOOPER said he worked in a studio originally built by Mr. Robinson. He had all his blinds quite opaque, so that he could, if he chose, turn the studio into a dark-room, or he could admit a small portion of light. He was satisfied of the advantage of working with a small aperture of light, but all that light reaching the sitter. In relation to reflecting screens, he thought it was important that they should be placed at precisely the same angle as that of the principal light, being practically parallel with the angle of the skylight, the upward reflections so secured relieving unpleasant shadows very much.

A general conversation followed, in which Mr. Fry referred to the advantage of the folding screen both as a reflector, and for admitting a softened light through semi-transparent muslin.

A conversation on the change of colour in glass followed, in the course of which it was generally stated that common glass answered best for studios. Mr. Fry had tried various samples by exposing sensitive paper under them. The sample which obstructed least light turned out to be a piece of common glass.

Mr. MORGAN again referred to the advantages of being able to remove a portion of the skylight entirely. He did this during the greater portion of the winter, removing part of the south roof. The weather did not seriously interfere, and the gain in exposure was very great.

After some further general conversation the proceedings terminated.

### AMATEUR PHOTOGRAPHIC ASSOCIATION.

A MEETING of the council of this society took place on the 9th inst., at 12, York Place, Portman Square; T. SOWTH, Esq., M.A., F.R.S., &c., in the chair.

The minutes of the last meeting having been read and confirmed, the following members and subscribers were elected:—The Hon. Noel Waldegrave; K. D. P. Roberts, Esq.; A. Strohl, Esq.; G. M. B. Arnold, Esq.; R. O. Milne, Esq.; Capt. Jno. Houghton; J. E. Thornburn, Esq.; J. C. Stenning, Esq.; J. T. Hackett, Esq.; P. Gwynon, Esq.; E. R. Lloyd, Esq.

The secretary laid before the council a letter he had received from Capt. Allen, expressing a wish that the complete catalogue, for which a sheet containing the names of the best pictures only had been substituted the past year, might again be provided for use of the members. After some discussion it was decided that, since many other members had expressed the same wish to the secretary, the complete catalogue should again be printed, as in the previous years.

A. J. MELHUSH, Hon. Sec.

## Talk in the Studio.

PHOTOGRAPHIC SOCIETY OF LONDON.—The meeting of this society, intended to have been held on the evening of Tuesday next, to consider the draft of the new laws, is postponed through unavoidable causes. We presume that due notice will be given to members of the time of the next meeting.

IDENTIFICATION BY PORTRAITS.—A curious illustration is given in the *Pictorial World* of the difficulty of absolutely identifying any one by means of portraits, unless all the conditions of familiarity are preserved. Copies of photographs, taken

before their conviction, are given of Macdonell and Bidwell, whose names will be remembered in connection with the great forgeries on various banks a few months ago. These are placed side by side with portraits taken in prison, after the shaving off of board and moustacho in each. Two gentlemanly and intelligent-looking men become converted into two sinister-looking, hangdog-looking fellows, whom no one would ever dream of identifying with their former portraits.

**THE PHOTOGRAPHER ON THE GOLD COAST.**—No public scene is now complete without the presence of the camera, and it seems difficult to find a region so inaccessible as to be secure from its invasion, or to discover circumstances so discouraging as to quench the ardour of the photographer. We read in a letter from the Correspondent of the *Daily News* that on the triumphal return of Sir Garnet Wolseley to Cape Coast Castle, he was so beset by those anxious to greet him that "it was with difficulty that a space round the carriage could be got clear to enable a photographer, who had been on the watch all the morning, to get his apparatus in order to get a view of the scene."

## To Correspondents.

**THE PHOTOGRAPHIC SOCIETY.**—Several correspondents write again on the subject of the Photographic Society. Some express their congratulations on the prospect of restored amity, and hope that the hard words on both sides will be forgotten, and cordial co-operation for the good of the society follow. Some write to suggest that there should be a complete retraction of the charges and insinuations against the council, and that all proceedings which have taken place, either in opposition to, or without the sanction and co-operation of, the council, should be considered null, all matters commencing again from the point of the resignation. One remarks:—"There are two positions which may be assumed: first, the *status quo ante bellum*. This is the only condition on which a perfectly good understanding and really harmonious co-operation can be secured. There should be no reticence of grudges or unforgivable offences, which must result from a patched-up peace in which the gains of the agitation are retained by the agitators. The second position is that to which I refer in my last sentence, the *uti possidetis*, in which certain things have been secured during the absence of the council, and are not given up on reconciliation. If such a position could be accepted by the council with dignity, it certainly could not with cordiality." As we hope that a spirit of amity will be cultivated by both sides, and neither excessive demands nor unfair or churlish refusals will be made, it is scarcely necessary to discuss our correspondent's analysis of the situation. Another correspondent hopes that entire reconstruction may be the issue, and a really national society formed, in which outlying members shall have all the privileges of resident members, and especially hopes that we will continue to put a stopper on bitter tongues on both sides, which do an infinity of mischief. Two correspondents call our attention to a letter which appeared a few weeks ago asking if the funds were safe in the hands of the members of council elected at the annual meeting. Our correspondents suggest that this implies a doubt of the honesty of these gentlemen. The only suggestion which that letter bore to our mind was that, from lack of experience or prudence in the new council, the present surplus might easily be frittered away, and the difficulties out of which the late council had with much care retrieved the society be brought about again. As lack of prudence—not of honesty—brought the society into difficulties before, it was not an unnatural nor an offensive assumption to suppose that, under the charge of an inexperienced council, a similar state might be revived. Without altering our opinion of the wisdom of late proceedings, we should be unwilling to have given currency to anything which implied a doubt of the integrity of the actors therein.

**T. R.**—A rich black tone, like that of the print you enclose, may be obtained by several toning baths; but it does not depend entirely upon the toning baths. An imperative primary condition is a good negative with vigorous contrasts. With a brilliant negative and paper, and printing bath in good condition, it is not difficult to obtain rich black tones with almost any of the toning formulae in use; but the lime bath is most favourable to the production of blacks. Take 3 grains of chloride of lime, 2 grains of chloride of gold, and 12 ounces of water. Mix the solution forty-eight hours before it is required for use. This will readily give black tones, and may be used over and over.

**D. M.**—The portable camera we devised and described many years ago has undergone many changes and improvements since then at the hands of the manufacturer, Mr. Meagher, who will give you every information.

**Z. Y. X.**—The minute yellow spots in the mounted print you enclose may have proceeded from one of many causes, but it is impossible to say which without tracing the history of the print through all the possibilities. The spots may arise from imperfection in the paper. Sometimes albumenized paper which has been long kept, especially if in a damp place, will undergo a change which produces such spots. They may be due to imperfection in the mounting board, which appears to be of a common kind. They may arise from a prolific but rarely suspected cause of trouble, namely, particles of hyposulphite in the atmosphere of the operating room. Hyposulphite solution is sometimes spilled, or small portions of the crystals themselves. Being ground under the feet of persons constantly walking about the room into an impalpable powder, particles are wafted about by every little draught, and come into contact with paper and prints, and often cause minute spots, the origin of which cannot be traced. The dust from a coke fire will sometimes cause such a result. The markings on the sensitive paper most probably arise from contact with some shelf or table not perfectly clean.

**S. C. FELL.**—There is no efficient way that we know of by which you can repair a cracked ebonite bath, nor any method by which you can efficiently cleanse it so as to prevent its contaminating the silver solution. After being in use for a time such baths very often produce a fogging condition, as does gutta-percha also. The safest material is glass or earthenware. To make the best of your cracked vulcanite bath, perhaps the best plan will be to take a strip of linen and cement it outside over the crack with mastic glue, and then give the inside a good coating of shellac varnish, which will aid in filling up the crack and giving you a clean neutral surface in contact with the solution.

**J. D. LYSAGHT.**—It is possible to precipitate the baryta salt from your bath by the careful addition of sulphuric acid, which will throw down sulphate of baryta; but there is some risk at the same time of forming traces of sulphate of silver. You may try with a small quantity. Probably the safest and simplest plan will be to precipitate the silver by means of copper or zinc, and, after washing well, reconvert it into nitrate of silver by treating the precipitated metallic silver in powder with nitric acid.

**M. A.**—The only mode in which you can avoid inhaling ether fumes during the coating of large plates, so far as we can see, will consist in averting the face as much as possible, avoiding holding the nostrils directly over the plate, and keeping the room well ventilated. If you hold the plate as much at arm's length as possible, and as low down as possible, you will avoid the fumes considerably. We do not know of any protection to the nostrils you can use which would permit breathing, and would prevent ether fumes from penetrating. Excessive breathing of ether fumes will doubtless cause debility.

**WEST LIGHT.**—The permanent obscuration of your glass will doubtless be attended with difficulty, as it must make the light weak in dull weather. The simplest plan will consist in having an extra sliding-frame covered with white tissue paper, which can be placed over the glass when the sun shines, and removed in dull weather; or you will find the folding-screen covered with fine transparent muslin, or with the material sold by the stationers as tracing cloth, very useful. This screen may be placed so as to allow the direct sunlight to pass through the muslin before falling on the sitter. This will soften and diffuse direct sunlight, and need not be used in dull weather.

**F. T.**—The albumen used for preliminary coatings may be very dilute indeed; the white of one egg in a pint of water will answer. The best mode of applying it is by means of the Blanchard brush, which consists of a piece of swan's-down calico tied to the end of a strip of glass. 2. A fifty-grain iron solution may be used for development, but requires a little care in manipulation not to cause stains. About twenty minims of acetic acid would be sufficient. It tends to produce softness rather than intensity.

**ERRATA.**—In Captain Abney's article on "Dry-Plate Development," p. 128, second column, second line, for "adaptation" read "addition;" fourth line, for "my process," read "the process;" fifth line, for "extra," read "alkaline."

**TO ADVERTISERS.**—On account of the large number of Advertisements forwarded this week, the Publishers are reluctantly compelled to hold over some Announcements received later than those inserted.

Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED.

- MR. H. GREGSON, Luton, Beds.,  
Two Photographs of Rev. H. B. Smyth.  
MR. G. W. LEWIS, Bath,  
Two Photographs of Major Bosfield.  
MR. R. BROWNETT, Cheltenham,  
Photograph of Mr. H. B. Samuelson.  
Photograph of Mr. J. T. A. Gardner.



## The Photographic News, March 27, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### LORD LINDSAY'S EXPEDITION TO THE MAURITIUS.—HOW TO ESTIMATE ALBUMEN IN SOLUTIONS.—ROMANCE AND REALITY.

*Lord Lindsay's Expedition to the Mauritius.*—Early in June is the time fixed for Lord Lindsay to leave England for the Mauritius, attended by a staff almost as numerous as that which accompanied our English general to the Gold Coast. The object of the expedition is, however, a widely different one, although the benefits that will accrue from it will doubtless be more lasting. Independent of the observing parties sent out under the auspices of the Government and the Astronomer-Royal (of which we gave an account a fortnight back), Lord Lindsay acts entirely upon his own account in observing the transit of Venus, and will proceed to the station selected by him with a set of apparatus and body of assistants chosen by himself. The optical apparatus to be employed has been constructed by Mr. Dallmeyer, and may be considered the most perfect of its kind; and when we state that the length of focus of the lens—which governs, of course, the dimensions of the camera—amounts to thirty-eight feet, our readers can form some idea of the stupendous nature of the preparations that have been made. An untimely accident, which at one time bade fair to jeopardise the whole undertaking—viz., the fracture of the big lens—has fortunately turned out to be less serious than was at first supposed, the principal part, or sole of the lens, having been left whole, and the defect, therefore, reparable in time. Like Capt. Abney, Lord Lindsay has decided to abandon moist films, and employ only dry plates in securing his records, and he has now reduced the number of processes under trial to three, from which a choice will eventually be made. His early departure for the Mauritius will allow, it is estimated, about three months at that station to prepare and get accustomed to the operations to be performed, so that the whole staff, twelve in number, may be perfect in their duties on the eventful occasion. Lord Lindsay himself will be chief operator, taking the plates from assistants, exposing them, and handing them further to the development or packing room. The period of exposure will be ascertained by experiments undertaken for weeks previously, and an arrangement adapted to the lens will allow of any given period of exposure being given, from the five-hundredth to the tenth of a second. An electric recorder in connection with clockwork, which is put into action by a tread of the foot, will control the exposure, and only allow the plate to be uncovered for the period determined upon. Every tenth plate that is taken will be forthwith developed, the film covered uniformly with the solution by hand, and then immersed into a bath; the result obtained from time to time in this way will guide the exposure of the plates in the camera. The phenomenon will last about four hours and a quarter, and as the temperature at the Mauritius during the time will in all probability be about ninety in the shade, a relief party will probably be necessary in the course of the work. The operations at this temperature will, however, be much simplified by the employment of dry plates, but the development of these will still be a critical operation. The observatory is to be forty feet in length, and the gigantic camera, which will of course be of the nature of a telescope, will come a distance of seven feet into the building. As our readers know, the pictures obtained will show a large bright disc, representing the sun with a tiny dark spot upon it—Venus—the position of this latter varying with every exposure, from the moment when it first infringes upon the sun's limb until it has traversed the entire disc. The time of taking the different pictures will be recorded, and the results will serve as diagrams upon which mathematical calculations can be

made. In front of the sensitive plate will be a fine grating, which will also be photographed upon every picture, and these lines will aid very much in making the calculations subsequently. But how large will the sun appear in the photograph, it will be asked, and will Venus be really apparent upon the film? To most photographers the dimensions of the luminaries which will be secured may not be deemed large with such an exceedingly long focus, but those who are acquainted with photo-astronomy will be of a different opinion; indeed, no other observer, either in this country or abroad (unless it be Mr. Rutherford, of New York), will produce results of bigger dimensions. Lord Lindsay's disc of the sun will be four inches in diameter, while the little planet Venus, moving over its surface, will measure as much as one-tenth of an inch.

*How to Estimate Albumen in Solutions.*—It may be useful to photographers to know how to estimate the amount of albumen in various bodies, and a *modus operandi* of a reliable nature has just been made known by M. L. Girgesohn, which we will here quote. As a rule, photographers do not require their albumen in a chemically-pure state, but, at the same time, in a delicate process, which is being carefully tested, occasion may arise when the quantity of pure albumen in a solution requires accurate determination. The solution containing the albumen should be mixed with half its volume of a twenty per cent. solution of common salt, and a strong tannin solution is then added in slight excess. The precipitate is collected on a weighed filter, and washed with water till free of salt, and afterwards with boiling alcohol, until no more tannin can be detected in the filtrate; this latter is then pure albumen. The albumen of eggs, of serum, and like bodies, combines with twenty-eight per cent. of tannin.

*Romance and Reality.*—Photographers have much to answer for, and they ought to give the world thousands of pretty pictures to compensate for the many romantic charms they have broken. Take, for instance, the popular notion of Royalty as it existed a hundred years ago, and as it now is, based upon the evidence of a multitude of photographs. To be a princess in former days was tantamount to being exquisitely pretty, and "as charming as a princess" was quite an ordinary expression. There was no mistaking a princess in the good old times—they were always so delicate, fragile, and fair; and, indeed, in a story-book, we remember, there was an infallible recipe for finding out whether a person was a princess or not: it consisted simply in allowing her to sleep upon nineteen featherbeds, below the undermost of which was a grey pea; if she slept soundly, there was no Royal blood in her veins; but if, on the contrary, she was chafed, and passed a restless night, this was taken for proof positive of her noble origin. With the photographic portraits of to-day before their eyes, we fear the belief of our children will be shaken in matters of this kind. Then as regards kings and emperors, instead of being dressed as they were represented in prints and engravings, in magnificent robes and crowns and sceptres, our photographer shows them as quite ordinary individuals, who sometimes wear a plain uniform, but generally affect a comfortable lounging suit and a cigar. One might, perhaps, forgive the absence of the crown, but surely the sceptre ought to be shown somewhere—either peeping out of a pocket, or laid aside on the mantelpiece for the moment. Fancy a child reading one of Hans Christian Andersen's fairy tales. "Come in," said the old king, when John knocked at the door. John opened it, and the old king came towards him in a dressing gown and embroidered slippers; he had the crown on his head, and the sceptre in one hand, and the orb in the other. "Wait a little," said he, and put the orb under his arm, so that he could reach out his hand to John. Think of a young scholar spelling through all this, and then being shown the portrait of the Russian Czar, or our Prince of Wales, or mighty Empress of India. He would at once have grave doubts about the story being true, and then



heaven forgive the photographer. Take away a child's world of romance, and you tear from him all his pleasures, all his happy day-dreams, all his castles in the air. And the cruelty of this cannot be defended for a moment, for he will come soon enough to know what a hard matter-of-fact place the world is. Fortunately, the chances are that the infant mind would sooner believe the story-book than the photographer, and stick to the more pleasant belief as long as it was able. There are, however, on the other hand, some people to whom photographs of Royal personages must afford unlimited satisfaction. We mean votaries of fashion, who are always in a state of mind as to whether a thing is fashionable or not. By people of this kind the series of Royal portraits issued from time to time must be regarded simply in the light of tailors' fashion prints, serving to show how they must regulate their dress. In the same way as Mr. Sapsea used to dress as the Dean of Cloisterham, so there are no doubt many who take high personages, as depicted in their photographs, for their models. They study the flourishes on the Queen's robe, and note the cut of the coat which the Prince of Wales wears. These things are to them of the highest importance, and to be successful in this matter is to them the great aim of life. Apart from all this, however, there can be no doubt that the photographer, in truly representing to us great people in their private life, has done much to bridge over that wide gulf which is supposed to exist between the grandee and the plebeian, and, by properly depicting those of high standing in the realm, has deepened the sympathy existing between the people and the heads of the State. This is abundantly proved by the ready sale which the portraits of popular princesses and princes command at the present time.

#### FRENCH CORRESPONDENCE.

IN one of my last letters I expressed great satisfaction at the creation, in Paris, of a photographic mutual benefit society. This week I have assisted at a general meeting of the members, and I have now not the least doubt in the world of the future of the association, notwithstanding the many vicissitudes through which it has passed since its establishment. At the present moment it numbers more than one hundred and sixty members, and many candidates are now awaiting admission into the society. Before very long, all the employés of the Paris houses will deem it a point of honour to become members. Notwithstanding the losses to which the society has been submitted on its establishment, it has at present funds sufficient, not only to meet its engagements, but to make some necessary sacrifices in the general interest. In a little while the society will have its own place of meeting, instead of assembling in a public room as at present. The meeting which I recently attended demonstrated to me that there existed a capital understanding between the president and members, and a general good feeling throughout was manifest.

Not only, I would point out, is this institution indispensable for photographic employés, who, as a rule, are well remunerated, and may, therefore, easily spare a contribution when in full work to put by for a rainy day, but the society completes the work undertaken by the French Photographic Society, and the *Chambre Syndicale*, composed of master photographers. All interests are now represented by special associations, and there only remains now for all three to fraternise mutually.

M. A. Liebert has this week published the second edition of his "*Traité de Photographie*." Although the work carries still for its principal title "*La Photographie en Amérique*," it embraces the practical details of processes carried on in every country.

M. Liebert, who has now practised the art for upwards of twenty years, enjoys a very large experience; he has

been well trained, and his intelligent and active mind is seconded by a ready pen. These qualities are precious ones when it is a question of preparing a work of this nature. For this reason the work I allude to is very certain to obtain a good reception. I believe, even, it will create a sensation, for the author, who has studied the processes with care, has neglected nothing to render them intelligible to his readers. His volume is illustrated by many illustrations of singular interest. The first is a very fine portrait of the author; then come four pictures upon one page, reproducing the different effects which may be obtained by the Rembrandt mode of lighting. Two portraits, cabinet size, follow, showing the difference which may exist between two clichés, one of which has been retouched and the other not. Finally, in illustration of the chapter on Heliographic Engraving, there is annexed a charming portrait engraved by the Rousselon process. The other prints are all produced by the Woodbury process. The illustrations are, therefore, of interest from every point of view; many woodcuts are, moreover, scattered through the volume explanatory of the text, which is thus rendered very intelligible.

The police authorities in Paris have decided to utilise the resources which photography offers for recording the features of convicts and gaol birds. For some time past, exertions have been made to collect from photographers portraits of all those who busied themselves with the Commune. These have been reproduced, and copies distributed to the various police stations of the metropolis. Now-a-days, every one sent to prison is photographed, and his picture kept for future reference. I am told, even, that there is a likelihood of passports, shooting licenses, and such like documents having in future to bear the portrait of the owner, it being notorious that the signature alone is of little value.

These tasks are confided to an operator belonging to the administration in connection with the police, so that there is no fear of any indiscretion or delay arising, such as would be very possible in the case of a stranger being charged with the duty.

And here I may remark a fact which is of significance: that there is scarcely a meeting held of the Academy of Sciences without photographic prints of some kind being produced by scientific men desirous of supporting their communications by means of authentic documents.

M. le Comte de Courten has forwarded to me some interesting observations upon a matter which for some time past has been under discussion, and which is at the present moment the object of general attention, viz., the spots which become manifest upon pictures printed with silver salts. Like MM. Rohaut and Hutinet, the skilful amateur I have named is of opinion that the cause of the defect must be sought for elsewhere than in the cardboard used for mounting the pictures. M. de Courten has remarked that pictures mounted upon cards with gold margins almost always alter in this way. The margins of gold are produced by means of Dutch metal, or, chemically speaking, with bisulphide of tin. It is applied to the cardboard by means of a fatty ink, or gold-size varnish, which is printed upon the card, the powder being afterwards applied by means of a dry brush. The metal or bronze attaches itself only to the size, but there remain very fine particles, almost invisible, all over the surface, which the most careful rubbing or cleaning will fail to remove. M. de Courten believes that every particle of metal remaining upon the card serves to produce a minute spot upon the photograph mounted thereupon, and he explains in the following manner the formation of the defect. There is produced, he says, a sort of galvanic action, on the one side being the bisulphide of tin, and on the other a film of silver forming the photographic image. The thickness of paper plays the part of a porous diaphragm. If the print has been strongly fixed, and has received afterwards



but insufficient washing, traces of the fixing salt are left in the pulp of the paper, and this then becomes the best conductor of the galvanic action which is established between the two metals thus placed in communication with one another.

## SPOTS, STREAKS, AND STAINS.

BY F. WALLER.\*

This article proposes to point out some of the effects and defects liable to occur in the making of negatives; their cause and cure.

Pinholes are little fine spots, like sand scattered evenly over the plate, which are transparent after the negative is fixed. Cause: overworked bath. Remedy: add silver to increase the strength, or add water, filter, and boil to proper strength. Temporary relief may be had by taking the plate from the bath immediately upon being coated.

Particles of undissolved excipients in collodion will also give a very similar pinhole, but generally not so numerous and large. Remedy: careful filtration.

Comets, or spots with little tails, proceed from dirt in the collodion, upon the plate, or dust in the holder or instrument. Care will obviate these.

Circular spots in the shape of rings occur where water has splashed upon the albumen surface of the plate.

Circular opaque spots are caused by excess of acid in bath or dirt on the glass; new samples of glass will often produce this disorder.

Spots are also caused by the slides being drawn too rapidly and splashing the plate, by particles of old film being left upon the plate, by bubbles in the collodion, and by floating particles of dirt in the bath.

Streaks are produced by the collodion not being well set; these show most at the thick end of the plate, or by the collodion being over set, which shows at the thinnest end of the plate; by stopping the plate in immersing it in the bath; by immersing it too rapidly, causing waves from the dipper; by not being coated enough, which produces hair lines running the same way the plate was dipped; by the bath not being sufficiently iodized, which will cause alternate opaque and transparent lines, running the same way it has lain in the bath.

Streaks are also produced by too strong a developer, when they will appear as more dense marks, running straight from where the developer was poured on. Fixing in cyanide will produce streaks which show more on the back of the negative.

Streaks are caused by imperfect flowing of the collodion, or when it is too thick; they will appear as ribs running toward the end the collodion is run off of.

Network streaks occur from the presence of water in the collodion.

Over-iodized collodion will give zigzag markings.

Too strong redeveloping solutions will also give streaks or an acron density to the negative.

Stains are caused by dirty glass, or by dirty fingers in contact with the plate, by not wiping the corners of the holders, by not dripping the plate enough, by holding it up to look at before washing off the developer, by not washing off the developer well before fixing, or by not washing the hypo well away afterward.

Fogs are caused by overtime; by undertime and forced development; by light leading into dark room, camera-box, or holder, or by reflection in the tube; by want of acid in the bath, and by excess of it; by the bath not being iodized, by the developer not having acid enough in it, or by being too strong or weak by alkaline collodion. All fogs from light are easily discerned, as they are opaque; and all chemical fogs, except from dirty glass and excess of acid, can be rubbed away with the finger. With pure chemicals and care, any or all of these troubles should give but

momentary difficulty. Cleanliness will cure all streaks, spots, or stains, and convert any streak into one of good luck.

## THE REPRODUCTION OF NEGATIVES.

BY J. OBERNETTER, OF MUNICH.\*

A TRUSTWORTHY and easy method of multiplying negative in such a manner that the reproductions are in every way equal to the originals is a matter that has occupied me for a period of ten years. I have tried copying by means of the camera and by dry plates, and obtained in this way good positives; but the negatives produced again from these positives were bald and hard, and it has never happened that I have been successful in securing a printing cliché by these means which has satisfied me. Collodio-chloride gives excellent results, and by its assistance I have obtained negatives which yielded prints quite equal to the originals; but regarding the trouble and time they cost me, and the long period I had to wait until I secured a good result, I will be silent.

In the year 1870, when the war allowed me a little time for experiment, I set about following out an idea of my own, to attain the object of my desire by means of the powder process; and in 1871 I was enabled to perform a very heavy task, wholly and alone by this method. At that time I employed silver as the material for powder, such as is secured when old silver baths are precipitated by means of sulphate of iron solution; while for preparing my sensitive mixture I made use of a very complicated formula.

By practically working out the method in my own studio, and employing it in my business, I have succeeded in rendering the *modus operandi* very simple, and may say, with a good conscience, that the process is really to be recommended. In my own business the method has been constantly worked for three years, and upwards of 2,000 negatives have been reproduced by it, and may be viewed by any one interested. The largest cliché has a diameter of seventy centimetres.

An examination with the naked eye would not tell even the most practised photographer that they were not silver negatives; the paper prints produced are quite as perfect as those from the original negatives. I may go further, even, and say that from a negative which is too dense, and requires a day or two to print, another may be produced which will yield quite the same kind of prints in the ordinary time; and in the same way it is possible to produce from a comparatively flat negative a vigorous one. From every negative, moreover, may a serviceable enlarged cliché be produced.

The method is not a complicated one. Difficulties from the chemicals employed cannot arise. Some manual skill is necessary, but by practice and industry everyone, whether photographer or not, may learn to carry out the manipulations perfectly. Here are the details of the matter. A new, well-polished patent plate is poured over with the undermentioned solution, in the same way exactly as collodion:—

Dextrine	...	...	...	4 grammes
Ordinary white sugar	...	...	5	"
Bichromate of ammonia	...	...	2	"
Water	...	...	100	"
Glycerine	...	...	2 to 8 drops.	

After a complete solution has been made, it is filtered. The preparation will keep good for several days. The plate having been coated, and the superfluous liquid poured off at one corner, it is placed in a horizontal position, and in some place free from dust, to dry, in a temperature of about 40° to 60° Reaumur. After a period of from five to ten minutes, the solution dries with a mirror-like surface. Whilst still warm it is put into an ordinary

\* Photographer's Friend.

\* Photographisches Correspondenz.

pressure-frame under the negative to be reproduced, and exposed to diffused daylight, according to the density of the cliché, for a period varying from five to fifteen minutes. If the exposure has been well timed, the picture appears slightly visible upon the film. After the plate has been withdrawn from the printing-frame it is again put into the drying oven, where it remains until it has become a little warmer than the atmosphere of the room in which the next operations are carried on. When the plate has reached this temperature, it is carried into an apartment not too much lighted, upon a sheet of white glazed paper. A fine dusting-brush is dipped in the finest levigated graphite, and this is rubbed carefully over the plate. Breathing upon the plate renders it more capable of attracting the powder. When the desired vigour has been attained, the superfluous powder is dusted off, and the plate is coated with normal collodion, made up of—

Alcohol	...	...	...	500 parts
Ether	...	...	...	500 "
Pyroxilin	...	...	...	20 "

Afterwards the film is cut through at the margins of the plate by means of a sharp knife, and put into water. In a little while—from two to five minutes—the collodion with the image will be detached from the glass; the film is at once turned over in the water and brought out upon the glass plate. Under a soft jet of water any air-bubbles that may exist between the collodion and the glass are removed, and then the image is poured over with a thin solution of gum-arabic (two grammes of gum dissolved in one hundred grammes of water), and allowed to dry spontaneously in an upright position. After drying, the plate may be varnished in the ordinary way. Upon the theory of this method of working, it will, I think, be unnecessary for me to enter; the matter is known sufficiently well, and I shall confine myself, therefore, to adding a few remarks on the subject. The addition of glycerine is employed by me in order to suit the solution to the different conditions of moisture in the atmosphere. Thus, in a moist, warm atmosphere, in summer, the solution does very well without any glycerine at all; while in winter, on the contrary, in a cold, dry atmosphere, the addition of from eight drops to one hundred grammes of the mixture is necessary. Practice will soon teach the operator how much is really necessary.

The right kind of graphite to employ is one of the main things to be attended to. With every kind of material—even the worst—serviceable negatives may be produced, but it is only one particular description which yields clichés such as are not to be distinguished from silver negatives. This is the genuine Siberian graphite, very finely levigated, prepared by Faber at Steiu, near Nuremberg, costing six florins a pound.

The printing is easily performed, for the limits are wide. During the operation of dusting on the powder much may be remedied. Too short an exposure in the printing-frame gives a fogged picture, too long a one a hard one.

As regards a large number of practical applications of this process, I hope, in a short time, to make a further communication. But very lately I received from Berlin some negatives of great value for reproduction, all of which had been produced upon very uneven Rhinish glass. In printing, I found my reproductions looked sharper, and I dared not use any great pressure, for fear of breaking the plates. I overcame the difficulty by employing mica plates, and transferred the film afterwards to other glass plates. Mica plates will lie quite close to an uneven glass surface, and by its aid it is possible, therefore, to reproduce negatives taken upon inferior kinds of glass.

## INTENSIFYING BY ATMOSPHERIC PRESSURE.

BY J. CASTELLANI, OF ALESSANDRIA.\*

ALREADY last year I had made up my mind to communicate a new process for intensifying negatives, but eventually postponed doing so, as I was not quite sure of my results. But now I am again reminded of the subject by M. Krüger, of New York, who has made known a method of operating analogous to the one I practise.

At the commencement of last winter it was my duty to secure a photograph of a horse. It was very cold at the time, so that I was fearful lest the silver solution upon the plate might freeze. It did not matter how rapidly I worked, there was always to be seen upon the film a grey crystalline formation, and no details in the shadows could be secured. The restless nature of the horse did not permit of a long exposure being given, and I then endeavoured, by breathing upon the film during development, to thaw it in some degree. What was my astonishment to find at once that the picture developed clearly and vigorously. On returning home I forthwith began to test my discovery further, breathing, or rather blowing, upon my plates during development. I did not obtain any uniform results, but found, nevertheless, with every experiment, that the duration of exposure might be shortened with this method, and the vigour of the picture augmented.

Since then I have always employed this plan when I have been compelled to give short exposures, and when I desire to invigorate certain details in a picture. I proceed in the following manner:—When I have a rapid exposure to give—whether it is a child, a dog, a horse, or what not, to photograph—I coat my plate with collodion prepared according to the undermentioned formula, viz.:—

Cotton	...	...	...	12 parts
Ether	...	...	...	500 "
Alcohol	...	...	...	500 "
Iodide of ammonium	...	...	...	5 "
Iodide of cadmium	...	...	...	5 "
Bromide of cadmium	...	...	...	5 "

In the bottle I invariably put a strip of polished cadmium, which will maintain the collodion in a colourless and unchangeable state. The collodion must be at least a week old before it is employed.

My silver bath is thus prepared:—

Nitrate of silver	...	...	...	30 parts
Water	...	...	...	500 "

A little nitric acid is added, just sufficient to give the solution a slightly acid reaction. The nitrate of silver I always recrystallize and fuse twice. In this way I obtain it in a perfectly pure state.

My developer is composed of—

Rain or distilled water	...	...	...	1000 parts
Double sulphate of iron and ammonium	...	...	...	50 "
Acetic acid	...	...	...	10 "

Alcohol as much as is necessary to make the developer flow evenly.

I intensify but very seldom by chemical means, as by breathing or blowing upon the negative I secure any degree of vigour. I expose very briefly, pour the developer upon the plate, and then blow through a glass tube about half a centimetre in diameter, in the upper end of which a small stopper of sponge is fixed to prevent any moisture from the mouth reaching the plate. A little experience will soon show how strong it is necessary to blow in order to obtain uniform vigour in a negative. If the blast is too weak, the action is insufficient; and if it is unequal or too strong, then the result is not uniform, and ugly patches are formed. In this way I am enabled to obtain clear and vigorous negatives full of detail.

If I desire to intensify more particularly certain portions of a negative, I use a hollow india-rubber ball, which is



in communication with a glass tube. By pressing evenly upon this ball I impel a blast through the tube, which is directed against any portion of a negative which it is desired to render more vigorous. So that I may be able to watch the effect of the air upon the plate during the operation, I have a looking-glass properly fixed, which readily shows me the change produced. I should remark, however, that this method of intensifying has its limits, and cannot be employed, for instance, in securing dense negatives, or drawings in which the lines are desired perfectly transparent and the ground opaque. For ordinary work—portraiture and the like—the required intensity may, in most instances, be secured by this plan of operating, and without having recourse to any working up of the cliché by chemical means.

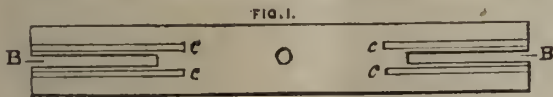
## A CONVENIENT AND PORTABLE CAMERA.

BY GEORGE BARNES.

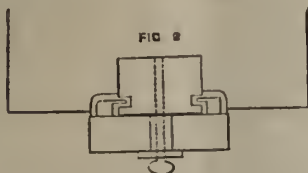
THINKING that perhaps the following description of a camera I use might be useful to some of your amateur readers, I send it to you.

The chief points of merit in my camera are, I think, these:—It is very light, very cheap, and will pack up into a small compass, so that a wallet about 14 by 12 will contain everything necessary for exposing three or four half-plates.

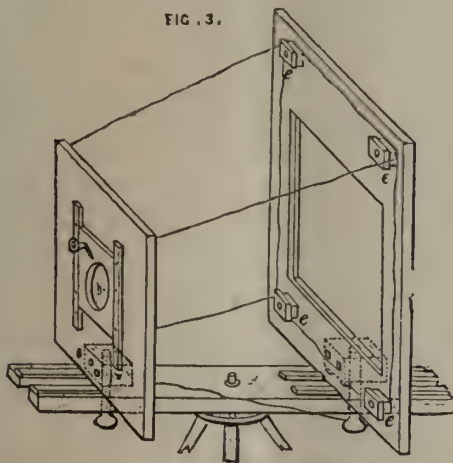
The base of the camera (fig. 1) is a piece of inch oak,



about three inches wide and fourteen long, having a slit (B B) cut each end, in which runs a thumb-screw to fix the front and back securely; c c c c are pieces of grooving screwed on. In this grooving run small blocks of oak, to



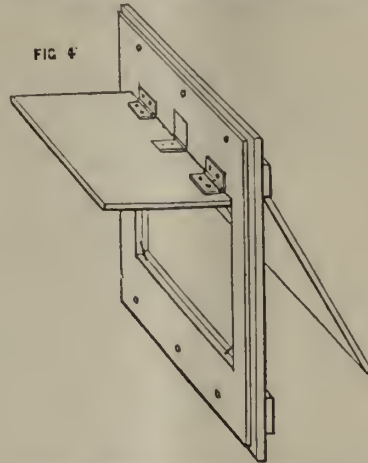
which the front and back are screwed (fig 2, and dotted lines in fig. 3).




The front of the camera consists of a piece of three-eighth inch oak, with grooving and sliding front to which lens is attached. The back is a piece of half-inch ditto, with

groove for dark slide to fit in. To each of these are screwed, in the portion shown (c c c c, fig. 3), small blocks, notched, over which the body of the camera fits. The body is made of cloth, with yellow lining inside, having a piece of wide elastic run through each end to draw it over the four projecting pieces, which are connected together with strips of cloth, to more effectually exclude the light. The body should be made about the right length for the focus of the lens; if, however, as in my case, different lenses are likely to be used, it can be folded in the middle as required.

The dark slide (fig. 4), as also the focussing-screen, fits



in from behind. It consists of a piece of  $\frac{3}{16}$ -inch oak  $7\frac{1}{4}$  inches square (it is made square, so that the pictures may be taken either way, vertical or horizontal). A hole is cut to size of plate,  $6\frac{1}{2} \times 4\frac{1}{2}$ , and silver wire put to corners. On the front of this is screwed a flap and frame, the flap being rather thinner than the frame, to prevent it coming down on plate. A rebate must be left all round, corresponding to that in camera-back. The frame is double-grooved, to prevent the light getting in.

On the back is also screwed a flap. This need not have a frame, but simply a piece to hang it to, and button to keep it closed. The dry plate is placed in the slide, a piece of thick black cloth at back, and a piece of thick pasteboard behind this. The flap is then shut down, and it is simply impossible for any light to get in if only the cloth and pasteboard are cut the exact size. To expose, the front flap is opened by means of a piece of bent hoop iron in this shape  the part A being screwed to top of flap, and A B B passing through to back of slide; then, by pulling down the part c, the front flap is opened up, and kept so by a little bolt. The flap is kept shut till just before putting into camera-back by a small button; then, by placing the thumb against part C of crank, there is no fear of it opening before its time.

The light is kept from passing through the hole made for crank by a piece of yellow lining glued inside and tied round same. The focussing-screen is the same as dark slide, only without the back or front flap, so that the ground glass and sensitive plate are necessarily in the same plate.

The whole of this camera, including dark slide, I do not think cost me more than a pound; but as I made some of it myself. I cannot correctly tell.

Should any of your readers think of trying this camera, I shall be happy to give them any details concerning it, or give them the address of the man who made mine, and who, therefore, understands it.

Some may, perhaps, rather doubt an amateur dark slide, but I have used mine for two years, and never had any fault to find.

I find it more convenient to carry the base-piece screwed to the camera-stand.

# The Photographic News.

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## THE ACTION OF LEAD SALTS ON SILVER PRINTS.

WE have received some further communications on the action of lead salts on prints. Referring to the remarks in our last, Dr. Diamond reminds us that at the time to which Dr. Anthony refers, many calotypists used the lead salts for the double purpose of removing the final traces of hyposulphite, and improving the tone of their prints, a fine warm velvety black being obtained by its use. In Dr. Diamond's experience, the final issue was rarely satisfactory, the traces of lead left in the paper generally leading to discolouration of the whites after the prints had been for some time exposed to the atmosphere, which always contains traces of sulphur compounds in greater or less proportion wherever coal fire or gas illumination is employed.

In a communication from Mr. Gregson, it will be seen that his experience is wholly in favour of the use of the lead salt.

Another medical correspondent, whose letter we publish this week, again refers to more satisfactory experience, prints treated with the acetate of lead having withstood a trying ordeal, in the shape of exposure, without change. There are two facts of importance to be borne in mind in connection with the latter experience: the first is, that the atmosphere to which the prints have been submitted is probably much less charged with sulphuretted hydrogen, or other sulphurous vapours, than that of a large town; and second, that the prints have been exposed to light as well as air. The action of sulphurous vapours upon lead salts is of a darkening character, as is well known; but the action of light upon lead salts so blackened is of a bleaching character. Lead salts, when exposed to the action of sulphuretted hydrogen, rapidly blacken in the dark; but exposed to light, a bleaching action is produced by the light. Hence prints containing traces of a lead salt kept in a portfolio, whilst protected from light, but not sealed from atmospheric action, will probably change more than similar prints exposed to the full action of light. The difference in the condition of prints simply washed and treated with the lead salt appears to be this: simply washed prints may, unless very especial care be used, contain traces of hyposulphite of soda and silver, the presence of which will almost inevitably produce subsequent change. The use of the lead salt will secure the absence of these substances, but may leave traces of an insoluble salt of lead, which will darken under the action of sulphuretted hydrogen. If, after the use of the lead salt, the prints be well washed, a

little nitric acid being added to one of the washing waters to aid in removing the insoluble lead salt, there is probably no bad result to be feared. Whether greater safety will be more readily secured by its use than by very perfect washing, aided by mechanical pressure, will probably still be considered an open question.

It may be well to remind amateur experimentalists that the salts of lead are very poisonous, and that the absorption throughout the skin of a very small proportion is sufficient in some constitutions to produce an attack of painters' colic.

## BENGAL PHOTOGRAPHIC EXHIBITION.

THE recent photographic exhibition in Bengal appears to have been a success, and it is interesting to find the appreciation of the press and of the medal jury in this country, in relation to the works of various photographers, echoed in many instances in India. The medals given by the Bengal Photographic Society are probably the most liberal which have at any time been offered to photographers, and notwithstanding the residence of many skilful photographers in the Presidency, the lion's share of the medals generally find their way to this country.

The Viceroy's gold medal was awarded to Messrs. Robinson and Cherrill, for their fine composition, "Preparing Spring Flowers for Market"; and the second gold medal was awarded to the same artists for a series of figure studies. The silver medal for the best series of landscapes taken out of India was awarded to Mr. F. Beasley, for a series of views taken on dry plates. Captain Abney's pupils, the School of Military Engineering at Chatham, obtain an extra silver medal for a series of views at Windsor. Mr. G. L. Kemp obtains a silver medal for a series of views in Upper India. Messrs. Bourne and Shepherd receive a gold medal for Indian landscapes and architecture, and a silver medal for photographs of Indian antiquities. A silver medal is awarded to a series of fine pictures by the Woodburytype process. A silver medal was awarded to a fine series of photo-collographs exhibited by the Photographic Branch at the Surveyor-General's Office, which is under the charge of Captain Waterhouse. Mr. Marshall Wane receives an extra gold medal for his charming examples of portraiture. Messrs. Bourne and Shepherd receive the silver medal for the best portraits taken in India. A silver medal for portraiture is awarded to Messrs. Westfield, as resident photographers. A silver medal for portraiture of an Indian subject was awarded to Dr. Brown, an amateur resident at Manipur. Mr. England's admirable photographs of statuary also received a silver medal. Major H. L. Millett obtains a bronze medal for a collection of views on Chamba.

The *Calcutta Englishman* devotes considerable space to a careful and apparently discriminating criticism, a few extracts from which may interest our readers. Mr. Crawshaw's munificent prizes have had their influence, it seems, in the exhibition in Calcutta. We learn that—

"In portraiture, as might be expected, the finest specimens are from England, but the local contributions are unusually numerous, and many of them are in their way quite equal to the best work done in Europe; and we imagine that, besides the difficulties connected with the climate, one cause of the deficiency of large specimens from our local artists is the want of an appreciative public who are prepared to pay highly for such productions. The English contributions are not so numerous as last year, but it is noticeable that the influence of the prizes offered by Mr. Crawshaw for the best portraits of large size, taken direct or enlarged, is very marked, and the majority of portraits sent out this year are either full or about half life-size. That this is a move in the right direction there can be no doubt; but as yet the results cannot be considered quite satisfactory, though we note a great improvement, which will doubtless be further stimulated by the renewal of Mr. Crawshaw's munificent offer."

Referring to "Preparing Spring Flowers for Market," which we are told "most deservedly gains the Viceroy's



gold medal as the best picture in the room," the *Englishman* says that it

"Is certainly a masterpiece of photography, exceedingly perfect in all its details, and forming a most pleasing picture of an English cottage interior. Seated at a table strewn with flowers is a comely English peasant lass busily engaged, as the title of the pictures implies, in making up bunches of flowers for market, while another, having filled her basket, stands by, apparently in conversation with a third person not in the picture. The floor is strewn with baskets of flowers, vegetables, and other produce of the market garden. The cottage accessories are in perfect keeping with the scene, and come out just sufficiently distinct in the deep shadow surrounding the central group, which is brought into prominence with admirable skill by the light coming from a lattice window in the side of the cottage, and lighting up, in its way, the pots of blooming azaleas and other delicate plants brought in for shelter from the nipping frosts of early spring. The picture is of unusually large size, and the photography throughout very perfect. We cannot speak too highly of this triumph of composition; even the most conservative supporter of pure and untouched photography must admire the artistic skill and ingenuity that have been brought to bear in conquering the difficulties attending the production of such a picture. Several of our friends have asked us if it was really a photograph, and not a copy of a painting. No higher testimony to the art qualities of this splendid photograph can be needed. We only regret that it has not been printed in carbon, and its beauty thus rendered imperishable."

Referring to the views by Mr. H. Beasley, which are commended not only for their excellence, but for the information conveyed with them, in the appended note, of the process by which each was taken, the times between preparation and exposure, and between exposure and development, with other information regarding it likely to be useful to photographers, it is added that the writer has seen little wet-plate photography to surpass them."

Referring to the contributions from the Engineers at Chatham, the writer says:—"The whole series is excellent, and reflect great credit on the instruction given to the military photographers, who are sent from Chatham to all parts of the world."

Mr. England's Swiss views are very highly praised, and the Indian views of Mr. Kemp are commended, as showing how relief and picturesque effect may be gained by the judicious printing in of cloud effects, instead of the blank white spaces usually representing sky.

The well-known excellence of the Indian landscapes by Messrs. Bourne and Shepherd falls somewhat short, it would seem, in this exhibition.

"Though still superior to most Indian landscape photographs, we miss the soft brilliant delicacy and artistic treatment that characterised the earlier series by this well known firm; and although the present series are most interesting as illustrations of the scenery and architecture of little-known parts of India, with few exceptions they fail to please as pictures."

Speaking of some magnificent enlargements by the Autotype Company, they are described as among the finest pictures in the room, and regret is expressed that they were not for competition, or they would most undoubtedly have taken a very high place.

After a detailed notice of the examples of mechanical printing, the writer says:—

"The whole of these specimens of permanent printing—autotypes, heliotypes, Woodburytypes, and collotypes—are particularly worthy of attention, as examples of methods that are making rapid strides towards the complete extinction of the old and unstable processes of silver printing. While the silver printing remains the same, every year sees improvements in these processes, and a diminution in the obstacles and difficulties that hinder their general adoption. We look forward to the time when silver prints shall be the exception instead of being the rule."

Mr. Marshall Wane's portraits are highly appreciated, but Colonel Wortley's bold style does not please the writer, although the examples received honourable mention. Captain Swiney's examples of combination printing are commended, but regarded as less successful than the examples

exhibited last year. Mr. Hubbard's "Stolen Moments," and "Think it Over," which received honourable mention, are much admired. The notice concludes with an appeal to resident photographers to do fuller justice to the comparatively untrodden field of Indian specialities, and show results at the next exhibition.

#### A CURIOUS EXPERIENCE IN DEVELOPING.

OUR readers will find on another page an article by Signor Castellani, describing a method which he styles "Intensifying by Atmospheric Pressure;" the operation to which he refers consisting in blowing upon the plate during the process of development, and by so doing practically augmenting the energy of the developer. The statement at first sight seems curious enough; but we have no doubt that, with due qualification, it is strictly true, and that the experience of many photographers will confirm that of Signor Castellani. Many readers will remember that during the tardy development of a plate they have blown upon some patch of obstinate detail which failed to come out, with the half instinctive notion that forcing the developer into more intimate contact with the film by blowing would hasten the operation. And no doubt, whatever may be the cause, the desired result does follow. Mr. Robinson has more than once described an analogous operation which he employs for local intensification. If a portion of a background is required somewhat lighter than the rest—or if, in short, the light and shade of the picture generally can be improved by a patch or streak of light—he produces the result by pouring the developer or intensifier repeatedly upon the portion of the negative in which the extra light is required, and the forcible contact produced by pouring gives the increased intensity desired. Mr. Lake Price recommends, for securing local intensity, the use of a dropping bottle containing silver solution, by which a few drops could be applied to a special part of the negative. It is probable that the plan of blowing might be systematically employed, for securing local intensity, with advantage. An india-rubber ball with a tube might be kept at hand, and, if used with skill, various modifications of the light and shade of a picture secured by its use. The experiment is, at any rate, easy; and but one precaution is necessary: the india rubber must not be vulcanized.

#### DR. SCHNAUSS ON GILL'S CHROMO-INTENSIFIER

In the *Photographischs Archiv*, Dr. J. Schnauss gives the results of an examination he has made of Gill's intensifier, an American production, which the inventor states should be applied after the cliché has been fixed, the operator taking care only to secure a well detailed and a harmonious result, and relying upon obtaining the necessary vigour subsequently, by an application of the intensifier. The advantage claimed for it is that it does not render the image more dense, but only changes its colour. Thin negatives treated with it have the requisite printing opacity imparted to them, the vigour being acquired, it is stated, without any loss of harmony or softness.

Dr. Schnauss tells us that the chromo-intensifier is a clear yellow fluid, perfectly odourless, possessing a slightly acid reaction, and precipitating, particularly in daylight, a brownish red substance. On evaporation no smell is perceptible, and there remains a brownish red residue, which, heated more powerfully, carbonizes, developing an odour of cyanogen or prussic acid. The residuum ash has a strongly alkaline reaction, and contains much oxide of iron.

Caustic potash and ammonia produced in the liquid a yellow precipitate, which, in the presence of an excess of the precipitating body, became insoluble, which is characteristic of the oxygen salt of uranium. With oxide of iron salts the fluid gave a dark blue precipitate.

There can be no doubt, therefore, Dr. Schnauss considers,



that the chromo-intensifier is no other than the Selle intensifier, consisting of ferricyanide of potassium (red prussiate of potash) and nitrate of uranium, which we have here sailing under American colours.

### ALKALINE SILVER DEVELOPMENT.

BY CAPTAIN W. DE W. ABNEY, R.E.

In a recent note on alkaline development I pointed out that certain organic matters acted as restrainers, though not as destroyers, of the image. At that time I was experimenting with alkaline solutions of silver, having imagined that the introduction of silver would conduce to density, whilst the rapidity of the plates need not suffer.

Chloride of silver dissolved in ammonia was firstly tried on dry plates containing but a small proportion of bromide of silver. The sensitive surface being almost entirely composed of iodide, as a rule, on developing such plates by the alkaline method, but little density is acquired; in fact, merely a thin image is obtained. By using the ammonio-chloride of silver, however, a picture of printing density was easily gained. This led me to suspect that some change must have taken place in the film. In order to test this, a plate was developed and not fixed. Half of it, after thorough washing, was flowed with ammonia. On testing, a copious precipitate of chloride was obtained, and the shadows of the unfixed picture showed a corresponding diminution in density. The other half, when exposed to light, blackened as chloride of silver does. After repeating the experiment I have come to the conclusion that in the shadows the chloride was deposited in or substituted for the iodide. No trace of chloride was visible in the high lights. The plain pyrogallie acid which formed the developer, on the addition of the ammonio-chloride of silver, invariably produced a muddiness, as might have been anticipated. This left an unfavourable impression on my mind, as, with other photographers, I like clear developing solutions. A point worthy of remark is that, after a short application to the plate, the pyro became perfectly right, and, on testing, no trace of silver was to be discovered.

I next tried a saturated solution of chloride of silver in hyposulphite. To this a small quantity of ammonia was added, and was then employed in a similar manner to the ammonio-chloride of silver. The results were the same as regards density. On treating the film of an unfixed but well-washed plate with ammonia, an orange colouration was produced, and in the solution, again, were more than traces of chloride of silver. Probably the chloride of sodium in the solution converted the iodide partially into bromide. The plates developed perfectly free from fog, and with detail in proper gradations. The results obtained seem to me to be capable of application if further experiments by independent observers prove that they are not exceptional. An iodized film is much more opaque to actinic rays than a bromized film, and consequently less liable to blurring. If alkaline development be adopted for such plates, the introduction of the alkaline silver will give density.

The rationale of the process is the same as that I published two years ago, when I stated I thought density was often obtained in alkaline development by the ammonia holding in solution a small quantity of bromide of silver. In the above procedure the chloride takes the place of bromide. I shall be glad if others who are working in the same direction will try similar experiments, especially with the hyposulphite solution.

### ON DRY-PLATE DEVELOPMENT.

BY REUBEN MITCHELL.

HAVING read Captain Abney's remarks on dry-plate development, I can fully endorse his opinions expressed in his article in the News of March 13th, 1874.

About three years ago, after many experiments with a variety of developers, I fixed on one very simple, but very

satisfactory in my hands. I discarded bromide altogether, as useless and injurious.

My *modus operandi*. I do not content myself with simply wetting the surface of the plate before development, but give it a good washing under the tap. Place the plate on a holder, and have a three-grain solution of pyro filtered, and a dropping-bottle with strong liquor ammonia at hand. Take a developing cup, and pour as much of the three-grain pyro in as will flow on the plate, rock it backwards and forwards a few times, and return it to the cup; add one drop of ammonia from the dropping-bottle, and add more pyro—about as much as will flow the plate well. To prevent marking, keep it moving from end to end till the whole of the detail is fairly visible; then wash off the ammonia well from both sides of the plate, if the film will allow it without danger of injury. If any risk, wash with care, and flow the surface with a little of the pyro solution, to neutralize the ammonia.

#### Intensifying solution—

Nitrate of silver ...	...	...	20 grains
Citric acid...	...	...	20 "
Water ...	...	...	1 ounce

in a dropping-bottle.

Take a clean cup with as much of the three-grain pyro solution as will cover the plate, flow it on and return it to the cup, add one or two drops of the acid silver, and return it to the plate. If the exposure has been rightly timed, the development will soon be complete.

I have successfully developed dry plates with the above, prepared by a variety of formulae, without the slightest taint of fog.

### A METHOD OF PRODUCING COLLODIO-CHLORIDE FILMS.

BY CAPT. W. DE W. ABNEY, R.E.

It has often happened that I have wanted a collodio-chloride film when I had no emulsion by me, and I have always found that the introduction of a soluble chloride into the collodion, and subsequent immersion in the bath, proved unsatisfactory, the films being too thin. This can be overcome by coating a plate with an ordinary bromo-iodized collodion, which gives a good creamy film, sensitizing it as usual, and then washing. The plate should next be immersed in a solution of chlorine water, where the bromo-iodide will become converted into chloride. It should be well washed, plunged in the bath again, or a weak solution of silver flowed over it to restore sensitiveness, washed slightly, and used in the ordinary manner. A preservative applied will be of use in some cases.

Another application of this method may be useful. After a picture on a dry plate has been well developed by the alkaline method, and the reduced silver dissolved away with nitric acid, the plate may be treated with chlorine water, &c., as above, and the transparency, or reproduced (but reversed) negative, darkened up by light to any desired degree of intensity. One or two similar applications of the above may suggest themselves.

The rationale of the process is, that chlorine will displace bromine and iodide; similarly, an iodized plate may be converted into a bromized plate by immersion in bromine water.

Chlorine is produced by a mixture of one part by weight of common salt, one part of binoxide of manganese, and two parts of sulphuric acid. These are brought into a good-sized flask, and gently warmed; chlorine is evolved in this, and this is passed into water, through a common vent tube passing through a cork in the neck of the flask.

### ELIMINATING HYPOSULPHITE FROM PRINTS.

BY F. GREGSON.

As the use of acetate of lead for the removal of the hyposulphite from prints is now attracting some attention, a few further remarks on the subject may perhaps be acceptable.



Upwards of two years ago I treated some prints with acetate of lead. One of these prints was forwarded to the Photographic Society of London, with a print from the same negative, washed in the ordinary manner. The latter was then showing signs of a bleaching or fading action, while the print treated with acetate of lead was unchanged. I have a duplicate of this print; it is still unchanged.

The test to which these kind of prints was put by a skilful amateur photographer, as given in the PHOTOGRAPHIC NEWS, June 6th, 1873, proves their stability. He says, referring to this process:—

"Prints taken by me last autumn twelve months were placed in a stable window-sill—or, I should say, carelessly thrown there—and have remained there ever since, exposed to winter damp and cold, and to summer heat and drought. The window faces the south, and is by no means weather proof, and yet the whites of the prints are now as pure as when taken from the fixing bath, though marked here and there by fly-stains and dust."

Photographers who neglect to use a process which practically has answered so well are neglecting their best interests; and the emancipation from the old and cumbersome washing machines, celebrated for their tearing of large prints, is something also to be considered. These machines have much to do with the fading of prints in many instances—when not kept scrupulously clean—becoming contaminated with hypo from imperfect washing of the prints, in the first instance, when intrusted to careless assistants. I have the utmost confidence in the decomposition of the hyposulphite by chemical means as a preventive of the fading of prints.

Since writing the article in the Society's Journal, and reprinted in the PHOTOGRAPHIC NEWS, April 4th, 1873, I find rain water is not essential, as there stated. I am now using spring water, as rain water is not available. On adding the lead solution the water becomes like milk, from the carbonate of lead formed. A few drops of acetic acid are then added, until its transparency is again restored. The prints are then passed through this solution by two persons, keeping about six prints in the vessel at a time; one person continually but slowly immersing them one at a time, the other removing them singly into another water to which a few drops of acetic acid have also been added, to prevent the lead again being precipitated in the pores of the print as a carbonate. A few changes of water are then given, and the operation is finished. Care should be taken not to tone so deep when lead is used, as it exerts a strong toning action; and if the prints are fully toned, or left in the lead solution too long, they will have a disagreeable bluish or lavender tint, like an over-toned print.

In the year 1860 I tried the system of securing the permanency of proofs toned in the usual way, advocated by Mr. Charles Martel in the PHOTOGRAPHIC NEWS, July 20th of that year. Some of these prints I have now, and although no care has been taken of them until lately, they are now as perfect as when they left the last water. They are somewhat over-toned, the sulphuric acid employed exerting a strong toning action, which should have been allowed for. It is desirable that others who tried this process would also state how their prints are preserved. I think it might again be tried with every prospect of being successful.

It will be found that the most permanent prints are those that have been but a very moderate time in the water, provided the hyposulphite has been eliminated. Long soaking will fade a print before it leaves the water, no matter how carefully it has been washed.

### NEW PHOTOGRAPHIC SPECTROSCOPICAL OBSERVATIONS.

BY PROF. H. VOGEL.

I HAVE continued my experiments on the influence of colouring bodies on the sensitiveness of different photographic films. I have observed that not only pure bromide, but also pure iodide and chloride of silver are by far more sensitive

to the blue, green, yellow, and red rays than hitherto alleged.

If the slit of the spectroscope be opened to 0.25 0.3 millimetres, and if the exposure is long enough, the three bodies are, indeed, sensitive to nearly all the rays of the spectrum; the least to the extreme red rays, the most to indigo rays.

The presence of a well-known body (though colourless) changes in a most striking manner the sensibility to colours of the spectrum; nitrate of silver solution, for example, has this effect. Pure dry iodide of silver is but slightly sensitive to ultra-violet and violet rays, more for indigo and blue rays, very little for the others exposed. Iodide of silver under nitrate is more sensitive to ultra-violet, violet, and indigo rays than the dry iodide. The sensitiveness increases from violet to indigo, but near the line G of Fraunhofer it diminishes suddenly, and the other colours act very forcibly.

I mention here that the extension of the action of the spectrum is different at different times, even for the same body. Till now it was observed that the power of violet and indigo rays was greatly diminished with the altitude of the sun; but I observed, in oft-repeated experiments, that there is a variation in the actinic power of spectrum colours, independent of the altitude of the sun. Sometimes I got a spectrum impression on bromide of silver from ultra-violet to red; at other times I got only an impression of indigo, blue, green, and yellow, though the altitude of the sun was the same.

Chloride of silver exposed dry is not very sensitive, but exposed long enough it shows an action to the line B in red. Coloured with naphthalin red, chloride of silver gives a curious result: it becomes most sensitive for yellow rays, less for red and green, and the least for blue.

We have here nearly the same proportion in the actinic power as in the sensibility of our eyes. If it were possible to make chloride of silver more sensitive, the coloured salt would be the very body for taking coloured pictures.

Bromo-iodized plates exposed dry, or under silver solutions, show, also, a very remarkable difference: exposed dry, they show the most sensitiveness to blue and green rays, less for indigo rays, and very little sensitiveness for violet; exposed under nitrate of silver, the sensitiveness is very strong for ultra-violet and violet, increases till the limit between violet and indigo shows its most intense point near up the line G, and diminishes gradually to the limits of green and yellow.

### ON PHOTOGRAPHIC RECIPES AND PHOTOGRAPHIC RESULTS.

BY PROF. H. VOGEL.

FOR a long time past photographic journals have preached from the text that recipes alone are not in a position to yield beautiful pictures, but that a man also is necessary who knows how to use them; and that not only a good collodion, as may now be everywhere purchased, and such-like products, are required, but, before everything, a well-chosen pose, satisfactory lighting, the right exposure, and competent retouching of the negative. A successful picture can only be obtained in this way. And yet it often seems as if this good advice is thrown to the winds. Not long ago, one of those busy quacks who rely upon the gullibility of photographers made the tour of North Germany, giving himself out as a traveller of Mr. Dallmeyer, from London. The suspicious part about the man was, however, that he less offered lenses for sale than collodion recipes, enlarging processes, and goodness only knows what else. He did some very good business, and when at last it transpired that Dallmeyer had no traveller in that part of the world, the fellow disappeared. Perhaps he has turned up somewhere else, and is carrying on his trade as successfully as ever, for a man who speculates on the ignorance of others always does better than an honourable and fair dealer. I was, however, considerably astonished when I was told that this man had a method



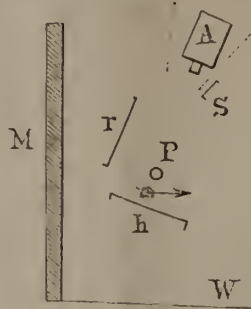
for sale which saved plate cleaning, and the process was no other than that of albumenizing the glass, which has been frequently discussed for some years past. The price charged for the process was five thalers (fifteen shillings). The same knowledge any of the purchasers might have obtained from a handbook at half the cost. For a recipe for durable albumenized paper the brave fellow obtained three thalers (nine shillings). The same recipe may be found on page 6 of my alphabetical photographic handbook, which is sold for a couple of shillings. These are only some examples of the secret processes for sale. The worst cases are, however, not made known, for the dupe, as a rule, is not anxious to make public how he has been done. There are photographers who hold themselves to be too well informed to require posting up from a journal or handbook, and when such a one becomes the prey of a quack, all we can say is, it only serves him right. Others, again, take in a journal, and also purchase a manual; but these lie uncult upon the table; they know nothing of their contents, and they do not expect that what they have to-day purchased for several thalers of a hawker, was given yesterday in the journal gratis. Such people may perhaps accept my advice to look, at any rate, at the index of the manual or journal in their possession, before they entertain the proposition to purchase what they have already in their hands in black and white. In the capitals, where societies exist, general conversation among the members is, fortunately, a great safeguard against such swindles. In Germany there are societies in but few towns—in Vienna, Berlin, Hamburg. In other places the tendency to form societies retrogrades instead of progresses, apparently; the Dresden Society, under the direction of the busy Dr. Krone, having been dissolved on the 7th November, because of the lack of interest shown by members.

Under such circumstances the provincial photographer does well to become a country member of one of the societies in the capital, as he then learns many things from its transactions which are useful to him in his business, and protect him from quackery.

It is singular how certain photographic novelties, which are scarcely noticed in the capitals, are made much of in the provinces. As an instance of this I may mention the so-called Denier effects. This description of picture was spoken of favorably in our city, tried, and again forgotten. In the provinces, however, it was different. Never in my life have I received so many letters respecting a process published in my journal as I have in reference to this matter. One wanted information; the other brought a new process; a third was ready to communicate a method, for a consideration, for making these Denier pictures. Denier, nothing but Denier, was the watchword, and it would be so still to-day, if the public had not behaved rather coldly towards this kind of portrait. In Berlin, at any rate, they made no sensation.

It was different, however, with the Rembrandt pictures. This effective style of portrait found many disciples. The late M. Grasshoff produced them in large numbers; but now they are scarcely to be seen in Berlin, although they are more popular than ever in the provinces. I receive from all quarters of the earth questions about the Rembrandts. Many have, indeed, asked me for a recipe for Rembrandt collodion, as if it were the collodion that was at the bottom of it all. The Rembrandt portrait is not a collodion, but a light effect, and only by properly arranging the lighting up of the model is the result to be secured. Such effects of illumination may be easily brought about in the studio, although it is a little difficult to describe the plan in words—at any rate, to those who have no eye for the light and shade gradations in nature. Those who possess such knowledge will divine of themselves how Rembrandt effects are brought about, and I would remark that they may be obtained in every possible manner. I will here explain the simplest of all plans,

which may be carried out without the aid of any complicated arrangement of blinds. The figure here appended



gives the outline of a studio: W is the glass end of the room, M the wall. The sitter takes up a position at P, and turns his face in the direction of the arrow indicated, so that it appears, from the apparatus A, in profile. A three-quarter profile, or half-face position, may be assumed, if desired. Behind the sitter is the background, h, of any suitable colour, while r is a very light reflecting screen covered with white paper. A mirror may be employed in lieu thereof, which must be so placed that its action in lighting up the shadows is distinctly visible. S is a small screen placed beside the lens to prevent the entrance of injurious rays, for without it the glaring light from the window W would shine into the camera.

Top-light has little to do with the effect. The apparatus A may, if desired, be placed more to the left or right of the dotted lines. The arrangement is somewhat modified according as the glass window is longer or shorter, and therefore it is necessary to make a preliminary experiment in a studio before proceeding to work. The duration of the exposure should not be too short.

### Correspondence.

#### ON THE INFLUENCE OF COLOURED BODIES ON THE ACTIVITY OF DIFFERENT RAYS.

DEAR SIR.—In the *British Journal*, March 6th, page 139, is published an interesting article of Mr. Carey Lea. Mr. Lea has repeated and continued my experiments on the actinic action of certain coloured and uncoloured bodies which have the capacity of making bromide of silver sensitive to such rays as the body in question absorbs optically.

In my researches I observed the connection between the chemical and optical absorption with the only apparatus suitable for such purpose, that is, the spectroscope. Mr. Carey Lea, in continuing my experiments, employed a more simple means. He took an artificial spectrum, made by strips of coloured glass, or glass coated with different varnishes coloured with aniline colour and other transparent bodies. Mr. Lea says:—"No coloured glass can be obtained that exactly represents the colour of a prismatic spectrum, but a sufficient approach can with ease be had."

This sentence contains an error, and a very important one. It is very easy to select a series of glass strips which seem to be similar to the colours of the prismatic spectrum, but if these coloured strips be examined with a spectroscope, it is easy to scrutinize that there is a very remarkable difference. For example, I have before me a violet glass. The light going through this violet glass contains not a trace of the violet rays of the spectrum. I have a blue-coloured glass which is transparent not only for blue, but also for the red rays of the spectrum. Through different specimens of yellow glass pass nearly all the rays of the spectrum. A varnish coloured with coralline permits sometimes all the yellow rays to pass if the reaction of the body is an acid one; but also a good deal of the indigo rays, whose chemical



action is the most powerful I know. Coralline of alkaline reaction absorbs the yellow rays, but transmits the red, green, and blue rays—the latter in a quantity whose chemical action is by far more intense than the chemical action of the red rays, which pass through the same body, and which seem to be to the naked eye the most powerful. Therefore it is not possible to make spectroscopic experiments with strips of coloured glass, or any other coloured body.

Take, for example, a strip of glass coloured red with rosaniline varnish, and expose under this strip a bromide collodion plate (coloured or not), and you will observe a strong impression; but it would be a great error to conclude from this fact that red rays act strongly on the exposed plate; for through this glass, covered with rosaniline, pass the blue rays as freely as the red ones; no one can determine whether the observed action is exercised by the one or by the other.

It is, for example also, a well-established fact that the indigo rays are the most actinic; but if an artificial instead of the true spectrum be employed, anybody could show that the activity of the indigo and blue rays and non-activity of the red and yellow rays is an error. Make, for example, an artificial spectrum, painted with indigo pigment, Naples yellow, and alizarine red, and take a picture with an ordinary bromo-iodized plate, and you will observe that the red colour of alizarine is the most actinic, and that the yellow is less powerful in its action, but by far more so than the indigo pigment.

These instances may be sufficient to show that it is not possible to make spectroscopic experiments with a so-called artificial spectrum of glass strips, and that Mr. Lea's experiments in this direction neither contradict nor confirm any of the facts I have observed with the true spectrum.

An explanation of the facts observed by Mr. Lea is only possible if the strips employed by him, and the pigment with which he has coloured his sensitive papers, are exactly analysed by the spectroscope.

PROF. H. VOGEL.

Berlin, 16th March, 1874.

#### ACETATE OF LEAD FOR ELIMINATING HYPO.

SIR,—Mr. Newton's proposition of freeing prints from hypo by means of a salt of lead, I am glad to see, is again being ventilated in this country and America. This is now the second winter that I have exposed prints so prepared to the tender mercies of a very unweather-tight stable window, and there they have lain under the full influence of a southern sun, and winter frost and damp, and there they have remained unnoticed till to-day (for I had forgotten all about them till the notices in this week's News recalled them to my memory, for I have not been in my studio for months). As far as I can judge, they are unaltered. The whites are as pure and the tones as fresh as when first fixed. Others in my album retain all their pristine bloom.

I fancy, from the account in your American Correspondence, that the prints there mentioned must have been immersed too long or in too strong a solution of the lead salt, as from the description the tone was originally in a measure due to the acetate; and perhaps you may remember, in an article I ventured to send you last year, I particularly pointed out that immersion more or less distinctly affected the colour of the print.

As I have several large photographs on plain salt paper sensitized with ammonio-nitrate upwards of twenty years old, which show no sign of fading, possibly albumen must take to itself a great share of the blame. It is, wherever the fault lies, a disastrous result, that valuable photographs should be thus lost to all admirers of the art; and no one can look over volumes upon volumes of albums without lamenting the multitude of family and other mementos that have passed or are passing into "the sere and yellow."

While printing in pigments is likely for some time to come to be the exceptional, and not the normal, method of producing small (at all events C.D.V.) proofs, we cannot be too careful in eliminating, as far as practicable, that oppro-

brium of photography—prints that must fade; every new light, therefore, that can be thrown on the subject must be thankfully hailed as a step in advance.

Unfortunately, years are required to test the stability of a photograph. I admit I have faith in the lead salt, if judiciously used; but I shall not hesitate to abandon it if I find my hopes fallacious, either in my own practice or in the experience of others. One thing, however, is clear: the present system is the reverse of satisfactory.—I am, sir, your obedient servant,

R. M. S.

### Proceedings of Societies.

#### EDINBURGH PHOTOGRAPHIC SOCIETY.

The fourth popular meeting was held in Queen Street Hall on the evening of Wednesday, the 18th instant. The exhibition of a series of pictures of American scenery included some fine views in the Yosemite Valley, and some very clever instantaneous pictures of horses, cattle, and dogs.

Mr. DAVIES, who gave the descriptive lecture, began by saying that the first part of the exhibition, including the exceedingly beautiful instantaneous pictures, had been presented to the society by the Photographic Society of Philadelphia, through its secretary, Mr. Ellerslie Wallace, who, some of the members would remember, honoured them with a visit some time since. The pictures, as would be seen, were of a very high class, and he had no doubt that the members would see that they would require to "put their best foot forward," if they wished to keep abreast of their American cousins. Most of the Yosemite Valley and Niagara pictures had been kindly lent for exhibition by Mr. Walter Woodbury, and as they were printed by the process which bears his name, it would be seen that it was capable of giving very high-class transparencies.

The hall, as usual, was quite full, and the exhibition was in every respect a success, especially the portion relating to the Yosemite Valley, about which the lecturer gave much interesting information, for which he received a hearty vote of thanks.

#### PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

The meeting of the Photographers' Benevolent Association, held at the Rooms of the Society of Arts on Thursday evening last, was, on account of the paucity of attendance, adjourned *sine die*.

The committee then proceeded to fill up the vacancies in the various offices by virtue of one of the rules, which provided for this contingency. The following gentlemen were duly elected, and, with two exceptions, have consented to serve:—As *Vice-Presidents*—Rev. F. F. Statham, M.A.; and J. H. Dallmeyer, Esq. *Trustees*—Col. Stuart Wortley; Capt. Abney, R.E.; W. England, Esq. *Auditors*—A. L. Henderson, Esq.; G. Taylor, Esq. *Board of Management*—Mr. G. Croughton (Chairman), Mr. Ganly (Deputy Chairman), Dr. R. J. Mann, Messrs. W. S. Bird, J. Skinner, Thos. Fall, W. T. Bovey, Ashuan, Jerjesen, Attwood, Corles, Wilson, Buchillot, Rheinlander, and Annand.

The committee have to acknowledge the receipt of £5 from Messrs. Mawson and Swan; £5 5s. from Messrs. Spencer, Sawyer, and Bird; £5 from Fred. York, Esq.; £3 from J. Skinner, Esq.; and £1 1s. from David Rees. From letters, &c., which the secretary receives, he can state that there is plenty of money waiting for the association as soon as the intending donors can see the assistants in photographic establishments take the matter up in a proper spirit.

### Talk in the Studio.

THE CONSERVATIVE CABINET.—Messrs. Dando and Co. favour us with a cabinet card containing a dozen medallion portraits neatly arranged, with the name attached to each, containing portraits of the most prominent members of the present Government. They are described as copied from a picture by Mr. William Lucas, but possess all the minute faithfulness of excellent photographs. The cabinet so photographed will form a welcome addition to many albums.

THE ATHENÆUM ON CARBON PRINTING.—It is not a little singular that the *Athenæum*—which, in times gone by, has often dwelt on lack of permanency as one of the chief drawbacks of photography—rarely fails to express a conviction that the carbon prints are inferior to silver prints in excellence. In a recent notice of some autotype enlargements it says:—"These are admirable productions in their way, although, like all 'autotypes' that we have seen, they lack the brilliancy and

clearness which are, in our opinion, the chief charms of photography. On the other hand, the great size of such works appears to us a positive disadvantage. No one wants such big things for his own house, and, however interesting they may be to photographers as *tours de force*, the general public are not likely to care for them. Of course we cannot criticize these things as works of art. The question of the value of size must be determined by the purpose for which the pictures are required; but surely it illustrates a singularly unfortunate experience, or lack of appreciation, to declare that all autotypes lack brilliancy and clearness.

**PHOTOGRAPHING THE HEART'S PULSATIONS.**—Mystery is, no doubt, the soul of romance, hence romance is doomed, for so rapid are the strides now made by science in every direction, that there will shortly be no mystery left. No sooner has Dr. Broca invented an instrument for measuring the inside of the skull, thus literally "taking the measure" of any individual's mental capacity, than Dr. Ozanam, of Paris, originates a device by means of which "the beating of our own heart" may be photographed. The apparatus consists of a bag of india-rubber, to which a glass tube is fastened; this, being filled with quicksilver, is placed on the heart of the subject of the experiment, the movements of which are communicated to the quicksilver and indicated on the glass tube, while the results thus obtained are recorded by photographic appliances attached to the apparatus. It will greatly add to the interest of actions for breach of promise if, besides writing imprudent letters, fickle suitors take to proving the strength of their emotions by forwarding photographs of the state of their hearts, and the *pieces de conviction* at such trials consist, besides locks of hair, flowers, and other antiquated tokens of affection, of a correct register of the deceptive pulsations of those "foul, foolish, fluttering things."—*Echo*.

### To Correspondents.

**\*\* TO AGENTS AND ADVERTISERS.**—Next Friday being Good Friday, the PHOTOGRAPHIC NEWS will be published on Thursday, April 2nd. Advertisers should send in their Announcements not later than Wednesday, the 1st.

**A SUBSCRIBER SINCE 1866** will find many articles in the volumes he possesses on the subject of enamelling the surface of photographs, and these articles contain much fuller information than it is possible to give in this column, as he will readily understand that it is impossible to reprint full details for the aid of one reader, who can easily refer back. He will find a very clear but brief statement of the formula and operations on page 117 of our last YEAR-BOOK. He will require a plain collodion of the tough, horny kind, perfectly clean plate glass, a solution of gelatine, one ounce in eight of water. The plates of glass having been coated with the collodion, and suffered to dry, the prints are immersed in the warm solution of gelatine, placed upon the collodion, and pressed down with a squeegee. When set, they may be removed from the glass; but in this case they will lose much of their gloss on mounting. If the cards are attached to the prints whilst they are attached to the glass the gloss will be preserved. If it is preferred to remove them before mounting, the gloss may be preserved by using for mounting some substance which will soften the gelatine as little as possible, such as india-rubber paste, or a thick flour paste, or gelatine dissolved in spirit, sold by Marion and Co., and others. See the YEAR-BOOK article for further hints. There is no newer or more effective method. This is the method employed in France.

**SENSITIZER.**—There are two or three remedies for the troubles. If you examine the sheets whilst draining after sensitizing you will find the solution stands in drops upon the surface, instead of draining away in an even wave. The paper is probably exceedingly dry when sensitized. Place it for an hour or two before sensitizing in a somewhat damp place, to remove the horny dryness. Reducing the strength of the silver bath to about forty grains, and floating a little longer, will often prove a remedy; or, if you prefer to keep the bath stronger, blot off the superfluous silver solution with clean blotting-paper instead of allowing it to drain. This will certainly effect a cure.

**OPTIC.**—We do not remember the precise address; but the name, with "Optician, Paris," will doubtless find him.

**G. GILYETT.**—We regret that we do not know one disengaged. The best plan will be to examine the advertisements in our pages, or to advertise.

**G. THOMPSON.**—The proper mode of removing the yellow spots will very much depend on their cause. If they are caused by iron, which many such yellowish brown spots are, the application of a solution of oxalic acid will remove them. Sponging gently with a solution of chloride of lime, and then rinsing, will remove much discolouration in an old engraving.

**PARALLAX.**—There is no advantage whatever in using an oval stop. Of course, looking at the head of a person with two eyes, you will see more of the sides than of the top and bottom; and if you use a large lens with full aperture you will, to some extent, have a similar result. Some photographers have recommended this plan as giving more effect of solidity and relief; but the disadvantages are greater than any advantage gained. In producing heads for enlargement we should not recommend you to place the camera at a shorter distance than twelve feet.

**W. H. H.**—The proper vessel in which silver solutions should be boiled is an evaporating dish of Berlin ware. Dealers in chemical apparatus, or most dealers in photographic material, will supply the article. A glass flask may frequently be used with safety by a person familiar with such manipulations. The thinness of the glass will check the risk of cracking from heat, but it increases the risk of mechanical injury. The kind of glass jar you used was probably one of the worst you could employ, being probably of common, badly annealed glass. Of course silver would be reduced by contact with the iron saucepan; but beyond the reduction of strength there will probably be no other injury. Make the solution slightly alkaline, sun, filter, and strengthen. Possibly an earthenware jar placed in a saucepan of water, resting upon a piece of wood, would permit boiling without risk. 2. We cannot judge much of the merits of the lens by the print enclosed. You will observe that it does not cover your cabinet portrait to the corners. The picture does not demand much comment; it is not bad, but is a little flat in the face, the result, apparently, of a somewhat dull diffused light.

**SUITABLE LIGHT.**—Both produce fine results when properly treated, but for certainty probably No. 1 is safest.

**S. E.**—We cannot assist you unless you give us details of the process you have employed. In doing so, please write as legibly and carefully as you can.

**M. D. F.**—Not at present. More information in due time. Several Correspondents in our next.

### METEOROLOGICAL REPORT FOR FEBRUARY, 1874

BY WILLIAM HENRY WATSON.

Observations taken at Braystones, near Whitehaven, 35 feet above sea level.

1874 February	Date.	Morning.	Noon.	Night.	Direction of Wind at 9 a.m.	
1	41°	41°	41°	S.	Fair and sunny.	
2	41	41	41	S.W.	Foggy. Rain this evening.	
3	41	44	42	E.	Fair all day. Gloomy.	
4	32	40	32	S.E.	Fair all day. Clear. Fine. Aurora commencing 6.15.	
5	34	40	35	S.	Fair all day. Hazy. Gloomy.	
6	32	36	32	S.E.	Fair all day. Sunny.	
7	36	40	45	E.S.E.	Fair all day. Sunny.	
8	35	38	32	N.	Fair all day. Gloomy.	
9	30	34	28	N.N.E.	Fair all day. Sunny.	
10	32	34	31	S.S.E.	Fair all day. Gloomy.	
11	28	34	34	S.E.	Fair all day. Gloomy. Hazy this afternoon.	
12	32	35	35	E.S.E.	Sleet p.m.	
13	40	42	40	S.W.	Rain a.m. and p.m.	
14	40	42	42	S.W.	Rain a.m. and p.m.	
15	41	44	43	S.	Rain all day.	
16	41	48	42	S.W.	Fair all day. Clear and sunny.	
17	40	41	39	W.	Fair all day. Gloomy.	
18	32	40	36	N.	Hail and rain this afternoon.	
19	32	41	34	N.	Fair all day. Clear and sunny.	
20	34	42	42	N.W.	Rain, and strong wind at night.	
21	44	46	41	S.	Rain all day.	
22	—	43	36	N.W.	Fair all day. Sunny.	
23	32	48	42	N.E.	Sunny all day. Rain at night.	
24	41	50	39	S.	Gloomy. Rain this evening.	
25	38	41	41	S.E.	Gloomy. Rain this evening.	
26	40	—	42	S.W.	Gale early this morning. Rain a.m. & p.m.	
27	42	43	42	S.W.	Rain a.m. and p.m.	
28	38	43	41	S.E.	Fair all day. Clear and sunny.	

We arrive at the following from the above data:—

	Mornings.	Noons.	Nights.
Maximum temperature during the month	41°	50°	48°
Minimum ditto ditto	28	34	28
Mean ditto ditto	37.3	41.5	38.4

Number of wet days during the month were ... 13  
 Number of days on which a rain fell ... 15  
 Number of fair days on which it was gloomy ... 6  
 Ditto ditto ditto ditto sunny ... 9

Wind from S., S.W., and S.E. prevailed.

March 2, 1874.

\* See Symon's *Meteorological Magazine* for February and March, 1874, and *Nature* for February 19th.



## The Photographic News, April 2, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO

PHOTOGRAPHY AT THE HOME OFFICE—A NEW METHOD OF PRECIPITATING GOLD—DR. GAYER AND THE INDIAN FAMINE.—THE CRAWSHAY PRIZES.

*Photography at the Home Office.*—Some time ago we mentioned the circumstance of the Home Office having adopted photography as a means of recording the results of explosions and other disastrous accidents in gunpowder factories and establishments where explosives are manufactured. According to statistics, it appears that in most powder mills an accident of some kind takes place with the utmost regularity about every ten years, and therefore the duty of securing photographs of such occurrences is one systematically occurring at certain definite intervals, for the number of manufacturers of explosives at present in this country is not only very large, but becoming more numerous every day. With gunpowder, gun-cotton, sawdust powder, white powder, fulminates, dynamites, rockets, composition pyrotechnic fires, and other abominations being made on all sides, peaceable citizens require some protection, and the Home Office, therefore, have recently appointed inspectors of explosive manufactures, in the same way as there are officers to control the working of mines, railways, &c. The duties of these are principally twofold: to make careful inspection, to see that due care is exercised, and the laws guiding the manufacture are complied with; and when an explosion or accident occurs, to report fully upon the cause, in order, if possible, to prevent such occurrences in future. It is in this latter respect that photography serves a most useful purpose, for a representation of the results of an explosion on a building, secured by the impartial camera, tells much to confirm or rebut evidence tendered by witnesses. A series of pictures representing various explosions are fitting documents for study, and guide the inspector in coming to a sound decision. The prints taken on each occasion serve, too, to illustrate the views brought forward by the officer in his report. One thing is found to be very necessary in securing such photographic results: they must be taken as soon after the accident as possible, else the freshly made fractures or cracks are apt to discolour, and the iron work become rusty by exposure to the atmosphere; moreover, rickety portions of the walls and ceilings left standing often fall down afterwards if the interval between the catastrophe and the arrival of the photographer is prolonged for a day or two. For this reason it has been found necessary to have at hand a set of apparatus which can be used at a moment's notice, and which does not require extraordinary means for its conveyance about the country. The same consists of a camera to take twelve by ten pictures, dark slides to contain four dry plates, and focussing cloth, all of which fit into a leather case, or portmanteau, measuring seventeen inches by eleven. This, although rather a heavy affair for one man, can, at any rate, be carried by a photographer at a pinch, a broad sling strap that goes across the shoulders helping to support the weight. A leathern pocket, with the lens, slung as a field glass across the body, and a stand to be carried in the hand, complete the equipment. An assistant will be all the better, but he is not indispensable, and the apparatus might be set up, and the four plates taken in twenty minutes. If wet plates are to be employed, then the second man brings along with him a light dark tent and a few plates. It would be difficult to design a more compact and ready apparatus for taking plates of large size than that employed on the service by the Home Office.

*A New Method of Precipitating Gold.*—An experiment recently made by M. Paul Weisskopf concerning the precipitation of gold in a very fine state of division might, we think, be put to some application by photographers, either in toning silver prints, or intensifying the photographic

image upon a washed and fixed collodion plate. He finds that gold in a dilute solution may be precipitated by starch or milk sugar, aldehyde or alcohol, with addition of sodium hydrate, and with as little exposure to light as possible. The metal is thrown down in a very fine and soft powder, forming a deposit of a much more delicate nature than if sulphate of iron be used as a precipitant. The fact deserves the attention of photographers, and we are rather sanguine that some application of the experiment may be utilized by them. In any case, we deem it our duty to bring the matter to their notice.

*Dr. Gayer and the Indian Famine.*—It is always pleasant to meet an old friend, especially when you do so unexpectedly in an out-of-the-way part of the world. Dr. Gayer, whom our readers will remember as having communicated two papers of interest to the London Photographic Society last spring, the one on fixing albumenized prints, and the other describing a method of securing instantaneous pictures of live animalculæ in water, has come to the fore in Bengal to do what he can for the great Indian famine. He points out that, even in the event of your placing at the disposal of the starving large stores of rice, the provision of this article alone will not sustain life. Other foods—such as fish, pulse, peas, &c.—are absolutely necessary, and if these are not forthcoming, all the rice in the world will not mend matters. As we are aware, Dr. Gayer is an accomplished chemist, and, being a skilful physician to boot, his advice comes with twofold force. We trust he may be as successful as a physiological chemist as he has been in his photographic labours. It is doubly pleasing to meet with a photographer who is something more than a photographer, and in Dr. Gayer we certainly have such a man.

*The Crawshay Prizes.*—Our foreign brethren can put forward no excuse this year that the terms of the Crawshay prizes are not known abroad, for in the Continental and American periodicals the fact of that gentleman offering rewards for life-sized photographs is put prominently forward. Last year Dr. Van Mouckhoven complained, and with some reason, that no announcement of the important matter had been made to himself and friends through the medium of the Continental press, and stated that the competition was really confined to photographers in this country. Such an assertion can scarcely be repeated this year.

### ART PRINCIPLES FOR PHOTOGRAPHERS.\*

31. THE study of light and shade is one of the first things a portrait photographer should take up. By means of light and shade we obtain roundness, relief, breadth, distance, and other effects as they are in nature, and as they should be in our pictures.

32. To understand the laws that control light and shade, we must refer to that branch of knowledge which treats of the laws and properties of light and of vision, as performed by the eye, or what are generally understood as the laws of optics.

33. Self-luminous bodies discharge light, and non-luminous ones do not. For this reason we have so much difficulty in getting the effect we desire when persons dress in varied colours—light and dark—and, worse too, have them assorted in spots, so to speak, about their persons. There are self-luminous faces too; witness the greasy, shiny face, and the light-skinned and fair-haired, as well as non-luminous ones; witness the sallow, dry, and dark complexions. We should particularly remember this when lighting and shading a head.

34. All bodies, whether self-luminous or the reverse, discharge light of their own colour. Thus, red will discharge red light, even when illuminated by the sun, and that is why red hair, red complexions, and red drapery take dark.

35. Again, light consists of separate or independent parts, called rays, which move in straight lines. When these rays fall upon any object, part of them are reflected, or part of them are absorbed by the object, if not transmitted through it. When the objects are bright, as a shiny face or silken drapery, a great part of the light is reflected. In other cases (we now speak of photographic portraiture) the light is more or less absorbed, and that is why we have shadows in our pictures.

36. You cannot have a better illustration of the principles of light and shade than a good round head. It is a study for an age, and if you learn to like the study, it will always give you fresh pleasure.

37. Pure white has no business in the photograph of a face, unless it be most delicately managed on the extreme high-lights. We want first the transparent shade, then the middle tints, and finally the extreme shades. This latter will always come directly opposite the focus of illumination.

38. The higher your light, or source of light, the more diffused will be the effect on the model, for the shadows will be shorter. The quantity of illumination should be carefully managed. Remember that in a photograph light is *white*, and where you direct light recklessly, you whitewash your model recklessly.

39. Touching the relief of figures, objects contrasted with a light background will appear much more detached than those placed against a dark one. Those parts which are the farthest from the light are the darkest, and will either euthard upon the background, or appear to become a part of it. A graduated background should be used generally, so that the dark side of your model may fall upon a light ground, and *vice versa*. This arrangement serves to detach the figure, and at the same time contributes to harmony of effect.

40. Reflected lights will be more or less apparent in proportion as they are seen against a darker or brighter background, because of the force of contrast. Reflectors should be used judiciously so as to modify the shadows, but not to utterly destroy them, or to make the distant parts too light.

41. The exclusive power of light and shade is to give substance to form, place to figure, and to create space.

42. Shade is not obscurity, but is a gradation of light. The transition from light to shade should be imperceptible. For the gradation of light that produces the middle tints there are two causes: first, the objects recede from the light, and next from the spectator.

43. The lights and shades must be so distributed as to give force and strength to the picture when viewed as a whole. The lights should be collected and managed in such a manner that all will support and relieve one another. If they are multiplied, broken, subdivided, no relief will be obtained; but if the relative parts are harmonized, and so arranged as to give shade to light, and light to shade, they form a strong combination, and produce a powerful effect.

44. We have now considered the subjects of form, and light, and shade, the principles of art which specially come into play in the practice of photography. Any diligent student who has the taste may acquire further knowledge of them, if he will, in his daily practice. His success will depend upon his ability to finish what science has begun. We give you the formula. Now put your mind to it and work out the result. Taste will now come in and dictate; the judgment and skill will modify and improve, and your own spirit must guide the work of the hands. Now begins that ideal imitation for which your previous studies have prepared you.

45. We now come to the subject of expression—not so much the expression of the face, as the general expression or appearance of the whole picture—everything that gives

character to the work. The form, countenance, attitude, &c., must all be treated with reference to expression.

46. Expression is the highest attainment of art, and is both definite and general. It belongs to every part of the work, and stamps its value. It completes the work, and demands the exercise of your greatest abilities and acquirements. First the outlines, then the light and shade, take their part in adding to the expression of your picture, and give beauty to the character of it, but they cannot redeem its defects. You must also consider proportion, which is as great and essential to truth of character as to beauty of form.

47. Fuseli remarks that “expression principally consists in representing the human body and all its parts in action suitable to it.” No two faces are alike in form, and the artist who would excel in expression must understand the physical construction that belongs to the temperament of his subjects. You would not pose a large man in some fantastic, dandy position. Neither should you allow a slender, graceful person to stand stiff and erect, without a bit of grace or ease—expression—in the pose.

48. Learn to study people as you meet them, in or out of your studio. When Leonardo da Vinci chanced to see a man with an expression of character that he wished to make use of in his work, he would follow him and study him until he was able to paint his face. So should you study men and women as you see them, and when you observe a good pose, or anything to suggest one, commit it to memory, to be used as a sketch for future work.

49. Much of the expression of a picture is due to the proper arrangement of the drapery—upon the number, size, and disposition of the folds, for on these depend the grace and beauty of the figure. Large folds, few in number, are better than many small ones, for the effect is less spotty. If the quality of the drapery requires small folds, they should be so distributed as to form a mass equal to one principal fold. Then they must be fully relieved by light and shade, or they lose their effect.

50. Arrange the drapery so as to fit the figure, and not conceal it; vary the size of the folds. Let them appear principally where they are held on by the arms and hands of the figure, and the rest be left to fall with ease and simplicity. Arrange the folds to harmonize with the position of the figure, as with its proportion. Great spirit and life may often be given to a figure by the direct opposition of lights and shades in the close deep folds, and grace, breadth, and harmony by those more ample and extended. Study all these things.

(To be continued.)

#### THE INTERNATIONAL EXHIBITION OF 1874.

IN Lieut. Cole's excellent paper before the Society of Arts he gives an interesting summary of the scheme of the exhibition for the present year.

“Commencing with the Fine Art division, there will be oil paintings, sculpture, and applied art from foreign countries and the United Kingdom, and the picture galleries will be well filled. Space will be reserved for a collection of works of applied fine arts, and it is felt that this will meet the demand for a ‘Royal Academy’—so to speak—for Industrial Art. There will be a special exhibition of sketches, subjects from the Queen's dominions over the world, executed by officers of the Army and Navy; and there will be collections of architectural designs, photographs, and engravings. Among the designs, the committee recommended the formation of a special collection of these for scholastic buildings. As last year, and in revival of the example set by this society, when collections were made of the works of Mulready (in 1848) and Etty (in 1849), there will be a collection of the works of deceased eminent British artists, and the owners of the works of



some of the following artists have contributed to the exhibition:—

## PAINTERS IN OIL.

J. Constable, R.A. ....	1837	David Roberts, R.A. ....	1854
Augustus Egg, R.A. ....	1863	David Wilkie, R.A. ....	1841

## PAINTERS IN WATER COLOURS.

J. Coney .....	1833	A. Pagia .....	1832
J. S. Cotman .....	1842	J. M. W. Turner, R.A. ....	
F. Mackenzie .....	1854	(Architecture only)	1851
S. Prout .....	1852	C. Wild .....	1835

"The collections are intended to be educational, and for the purpose of illustrating the careers of well-known British artists.

"In the industrial division for this year, the classes are:—

- Lace (hand and machine made).
- Civil engineering, architectural and building contrivances.
- Heating, by all methods.
- Leather, including saddlery and harness.
- Bookbinding.
- Foreign wines, in the vaults of the Royal Albert Hall.

"As regards the prospects of each of these, there will be lace from France, Belgium, Austria, Russia, &c.; there will be machine lace, and a machine at work, contributed by the Nottingham Chamber of Commerce; lace from Bedford, Buckingham, Ireland, &c., and workwomen to show how it is made on the pillow. There will also be a very interesting collection of ancient lace, formed under the direction and advice of a special committee of ladies, the Princess Christian being the president.

"In civil engineering and building, France will contribute models of new buildings in Paris; and there will be a large show of structural buildings, models, and designs. Several sewage processes will be shown in operation, as also methods for concrete buildings. In heating, there will be a good collection of all kinds of stoves entered to compete for the prizes of this society, and tested in houses constructed for the purpose in the exhibition grounds. In leather, there will be an abundance of machinery in operation, and a good show of finished goods. In bookbinding, there will be illustrations of machine processes by steam and hand; a show of modern works in cloth, paper, and leather; also a collection of old bindings.

"The exhibition of foreign wines in the cellars of the Albert Hall promises to be one of the striking features of the exhibition. A committee of gentlemen has laboured hard to bring together every conceivable variety of honest wine from all parts of the world, and the public, after being charged sixpence a-head, may enter the well-lit cellars, and there, as in the sampling-rooms of wine merchants, may obtain wine to taste; the agent of the exhibitor being permitted to make a charge at discretion. There will be wines from France, Spain, Portugal, Italy, Hungary, Austria, Greece, Australia, &c.; and, as far as possible, the wines of each country will be kept in separate cellars.

"The third division of the exhibition—i.e., scientific inventions—will be well represented; Gramme's electro-magnetic light, and a system of casting under pressure, being among the most notable of the exhibits.

"In concluding, I would again remind you that if you do not find the exhibition of this year an attractive *coup d'œil* of trophies, you will find some branches of industry made intelligible, and you will be able to study such a picture of the state of art in Europe as cannot this year be examined in any other spot in the world."

## CRIMINAL PHOTOGRAPHY.\*

WE have not yet come to an end of the additions made to the useful applications of photography. Nay, we seem to be still only on the threshold. Portraits—somewhat unmeaningly called *cartes-de-visite*—small enough to be in-

serted in an album, continue to be the main production of the art; but the variety in other directions is becoming amazingly large. Landscape, sea, and sky have been brought within the range of the camera, with surprising results; geological stratification and mineral structure are copied with a fidelity never before possible; leaves, buds, tendrils, bark, and roots have been made to tell their secrets to the collodionised plate; wings, furs, plumage, skin, hair, are in like manner revealed as to their surface structure. Medical men take photographs of diseased organs and tissues as among the best modes of comparing one disease with another. Archæologists photograph ancient marbles and inscriptions, ancient bronzes and coins. Ethnologists fix by a similar agency the characteristic portraiture of nations and tribes. Astronomers, by the aid of the camera, have largely increased the knowledge which the telescope and the spectroscope had given them of the sun, moon, and other heavenly bodies; and are preparing to use the same valuable auxiliary in watching the transit of Venus. Civil engineers take photographs of broken bridges and embankments, and mechanical engineers of broken boilers and locomotives, that they may have before them a permanent record of each disaster, so far as concerns the actual appearance of the fragments. And now justice steps in to claim her share in the service which photography renders to mankind. She asserts that when a rogue has become well-nigh incorrigible, it is right that the officers of the law should have an eye upon him, and a clue whereby they may know him again when he again transgresses.

During a few years past, a custom has occasionally been adopted of taking photographs of criminals in prison—not, of course, to gratify the criminals themselves, but to obtain permanent means of knowing them again. This was generally decided on by individual magistrates, or jail-governors, who foresaw the value of the system; and evidence has been afforded that they were not wrong in anticipating useful results. In one instance, two men stole some sheep in the north of England, drove them south, and added to the number as they went on. They sold them in London, and got off with the proceeds; but the detectives ferreted them out, and lodged them in Shrewsbury Jail. As a means of obtaining evidence, the police required that the thieves should be identified in the districts through which they had passed. A photographer took their likenesses; copies of these were sent to the several districts; and the clue thus obtained led to the conviction of the offenders. In another instance, where a murder had been committed at Durham, a photograph of a suspected man was sent by the police to the house of one John Owen, a tailor, in a distant part of England. It was immediately recognized by Owen's daughters, one of whom exclaimed, in tears, "Oh, it's our Jack; there is no doubt about it now;" and Owen himself also acknowledged that the photograph was a portrait of his son, against whom suspicion had already been aroused, and who proved to be the murderer.

When it was proposed, about three years ago, to establish this as a regular system, objections were raised to it by some portion of the press. It was urged that there are generally seven or eight thousand convicts in the various convict prisons, beside prisoners in other jails; that to take and keep photographs of them all would produce a criminal album of a most portentous bulk; that it would be unfair to photograph a man against his will, and thus render him an object of suspicion for the rest of his life; and that an ingenious rogue might so effectually distort his features, as to render identification difficult, if not impossible. And it was added: "Of what use will the photographs be? Criminal faces are almost all of one type. There is but little individuality about them; and the various photographic portraits, which will compose the new criminal gallery, will have so unusually strong a family likeness as to be of little or no practical value in establishing the identity of a prisoner." These objections were without difficulty removed. As to the number of photographs, this might be lessened to

\* All the Year Round.

any degree if the results were not found adequate to the expense. As to the unfairness of photographing a man without his own consent, this objection falls to the ground; the photographs are for the police authorities, not for the public; and they are portraits of wrong-doers, concerning whose future proceedings society has a right to be placed on its guard. And as to the family likeness among rogues, every day's experience disproves this; some of the most benevolent looking hypocrites are to be found among our criminals.

There is more cogency in the objection that a criminal might so twist about his face as to render a photograph wanting in real identity. The authorities have experienced this, and have adopted means for frustrating the cunning. On one occasion, at Shrewsbury, where a convict knew that he was to be photographed, he made such horrible contortions as to spoil the plate, and then a second. At a third attempt the photographer only pretended to be at work; he had either no lens in his camera, or no collodionized plate behind the lens. After a few moments, he shut down the apparatus with an expression of annoyance, and went into the dark chamber as if to develop a negative. The convict, thrown off his guard, resumed his ordinary shape of features; and at that moment a second photographer, quietly placed behind a screen, did the work effectually through a small opening. In other instances, by previous concert with the prison warders, the photographs have been taken in the labour-yard, at the instant when a prisoner was standing before a small opening in the wall. In most cases, however, a threat of shortening the rations, or increasing the labour, has been effectual in inducing the rogues to leave their features in their natural form.

Three years ago, the Secretary of State for the Home Department, in the exercise of power intrusted to him by Parliament, issued an order to the magistrates to furnish the Commissioners of Police with photographs of all offenders in county prisons, whose offences brought them within the statutory meaning of the Habitual Criminal's Act; thereby giving systematic effect to a plan which had before been only partially adopted. The Chief Commissioner of Police, reporting on the subject about a year afterwards, stated that the order had not been so well carried out as had been expected, but that the full benefit of the system might eventually be looked for. "It is confidently expected that a more general use of photography, the exercise of greater care in observing and noting any peculiarities in the personal appearance of prisoners respecting whose antecedents information is sought, and the cordial co-operation of the police and prison authorities of the kingdom with the Central Register Office, will lead to the frequent identification of old offenders. Many prisoners have been identified by means of their photographs, and former convictions proved. Occasional use has been made of photography in special cases with good results; and the system recently established of visiting prisons has given the detective officers a good knowledge of thieves."

Two years ago a new Act was passed to give more definite effect to the Home Secretary's order. Registers of convictions are to be kept in a prescribed form at central offices in London, Edinburgh, and Dublin. The governor, or chief officer of every jail, is to make returns of the persons convicted of crime who come into his custody. Regulations are to be made for photographing all prisoners convicted of crime, confined in any prisons; and refusal to obey any regulation made in this matter is to be deemed an offence against prison discipline. The expenses of keeping the register are to be paid by the Treasury; but the outlay for photographing the convicts is to be deemed a part of the regular expenses of each prison or jail.

An interesting parliamentary paper has recently been issued, giving an account of the results of this system, during the short time that it has been in force in a regular way. Down to the end of 1872, more than thirty thousand photographs of criminals had been received by the Commissioners of Metropolitan Police, and deposited in

the Habitual Criminals' Office, from the governors of county and borough jails and convict prisons. This was in little more than twelve months. Going back another year, to the date when the Home Secretary's order was issued, the total number amounted to forty-three thousand, forwarded from a hundred and two prisons in England, and thirteen in Wales (the experiences of Scotland and Ireland are not reported in this document). As we know pretty well the cost of photographic album portraits, done in the usual way, we may have a pardonable curiosity to learn the cost of those relating to criminals. This information the parliamentary paper gives us; for it appears that the forty-three thousand photographs have cost three thousand pounds—about one shilling and fourpence each. The rogues are certainly not worthy of this sixteenpence apiece; but then it is bestowed, not for their benefit, but as a safeguard in the hands of justice.

The House of Commons, in ordering the returns, to which the paper relates, requested to be informed in how many cases the photographs had led to the identification and conviction of offenders. Many of the governors of county and borough prisons were unable to furnish information on this point. Some said "not known," some "no record kept," some "not recorded," some "cannot ascertain," many of them plainly said "none," while the rest furnished instances of successful application. The Bedford County Prison reported: "Of the hundred and five county prisoners, twenty have been detected through the aid of photography. Cornwall said: "In many cases information received from the Habitual Criminals' Register—by photographs sent on jail forms for recognition—has led to the identification of old offenders. Dorset could tell of "six cases known;" while Herefordshire reported that "three who have been in custody here were recognised by the police elsewhere through their photographs." The authorities at the Holloway City Prison had no means of knowing accurately the number of cases in which photographs had led to the identification and detection of criminals; but, "at any rate, they can say that about thirty of the number have since come under their observation, and have been re-dealt with for fresh offences, in most instances receiving a sentence of penal servitude." At Leicester Borough Prison, three male prisoners had been detected, before trial, by means of portraits sent round to different counties, of having been previously convicted of felony. At Newgate many prisoners had been identified by means of photographs received from the Government convict prisons.

Some of the prisons sent memoranda of the cost that had been incurred in bringing the photographing arrangements into working order. Monmouthshire told of twenty-five pounds spent upon a studio; while at the Liverpool Borough Prison an expense of ninety-five pounds had been incurred for a photographing room, and sixty pounds per annum for the services of a photographer. Here and there the governor of the prison is a tolerably efficient amateur in this art, and has managed the matter without any cost to the county or borough. So far as we can judge from the returns, only one copy of each photograph is usually taken, but in some instances there are evidently more. Thus of two hundred and twenty-eight photographs sent to the Habitual Criminals' Office from Leicester, twenty-two were duplicate copies. Of five hundred and eighty-two taken at the City Prison, Holloway, two hundred and twenty-four were furnished to the Registry, three hundred and twenty-eight to the City police, and thirty to the magistrate. In all probability there were several triplicates in this instance. The greatest number sent by any one prison to the Criminal Registry were from Newgate, nearly four thousand eight hundred; next to this was Coldbath Fields Prisons, about two thousand eight hundred; Liverpool Borough Prison came next, with two thousand eight hundred; and Westminster County Prison, with two thousand three hundred. From these high numbers we come down to Lincoln County Prison, which sent just one



photograph, and only one, for which an outlay of three shillings and sixpence is recorded. It might be supposed that Newgate, with its large brigade of photographs transmitted to Scotland Yard, would be able to point to a goodly number of instances in which these have led to the detection of criminals; but there is one reason why the authorities at Newgate have no means of testing this matter: "The prisoners convicted here are, after trial, removed to various prisons to undergo their respective sentences;" and Newgate sees nothing more of them unless a subsequent conviction, for other crimes, happens to take place within the district of which this prison is the headquarters.

It is not alone in this country that photography has been brought into requisition as an aid to the administration of justice, nor, indeed, was it with us that the system first began. Every principal police station in the United States of America has for some years past had its "Rogues' Gallery"—a collection of portraits of offenders whose future proceedings require watching, and whose personal identity might clear up some otherwise insoluble puzzlement. It may perchance be only a joke, but the American thieves are still, in self-defence, to have established a "Detectives' Gallery"—portraits of such police officers as it might be worth while to avoid. Cunning rogues are more likely, we imagine, to photograph such lineaments on their brains or memories than on collodionized plates of glass.

### SUCCESS IN BUSINESS.

BY PROF. VOGEL.\*

WHEN MM. Loescher and Petsch, the well-known Berlin photographers, left their old studio some four years ago—where they had carried on a prosperous business for some time, and secured a goodly share of honour and money—and proceeded to move into more commodious quarters, built upon improved principles, a worthy old glazier was heard to remark: "What a fool I have been to be sure! I might have had that old studio if I had liked. It was offered to me before ever Loescher and Petsch were thought of. If I had only taken it I should be a made man now." "Are you a photographer, then?" I asked him. "Oh dear no," he replied; "but you can easily learn to be one in six weeks, you know, and the money required to buy such good machines as those of Loescher and Petsch I could easily have borrowed from my brother-in-law."

The worthy old glazier compared the success of Loescher and Petsch to that of an organ grinder who discoursed music by turning a handle. The refreshing greenness of this man may, perhaps, be pardoned; but it is pitiable to see similar ideas participated in by those in higher stations of life. "I see that both your machine and yourself work well," wrote once a well-known authoress to a photographer in Berlin. It would be pretty much the same as if a musical critic were to say, in discussing a concert by the renowned Liszt: "That piano of Broadwood's and Liszt played most exquisitely the other night."

This disparaging estimate of photographic success has very naturally an injurious influence upon the social position of the photographer, and that alone is bad enough, in all conscience; but worse still is it when this false view of photographic success or failure is entertained by assistants in the studio. It very often happens that a well-known artistic photographer engages for his work a draughtsman of moderate intelligence, whom he instructs in the matter of negative retouching. The assistant, after some weeks' practice, actually succeeds so well that he can work quite passably, provided that his principal looks after him pretty frequently, and points out his errors continually. In this way matters go on for a year quite

smoothly. Suddenly, however, an idea occurs to the retoucher while pursuing his lonely task, with his mind left free for thinking. He flatters himself he is the principal man in the business, and tells himself, with pride, that without his work the renowned and well-paid-for pictures which his chief sells would be of no value at all. The deduction which follows is but natural, viz., that the fine sums of money which his principal earns through his aid, secured by a paltry weekly stipend, could with but little trouble be transferred to himself. A relation supports him in the idea, money is obtained from somewhere, savings are added to the sum, and an atelier is rented. The furnishing of this swallows up all the funds at disposal, for, in full reliance upon his skill, he takes a studio in one of the finest quarters of the town. A *clientelle* is actually established through the recommendations of friends.

Then the young man begins to feel that he is scarcely so experienced as his principal as regards his relations with the public and the posing of sitters. He does not possess a knowledge of the right way of going to work, nor how to bring out the strong points, and hide the weak ones, of his models. He hopes, however, to compensate for all this in his retouching of the negative. The negatives are worked upon until the features are as smooth as those of wax dolls. With all these efforts, however, the result is far behind that obtained by his late principal; the reason being, that not only has the new photographer no taste, but he lacks, moreover, technical knowledge and experience. He was doubtless in a position, when supervised by others, to undertake a duty, and carry it out successfully; but he is not competent to conduct a business by himself. His enterprise does not succeed, the invested capital is lost, and at the end of six months the speculator has become a wiser man, and is once more retoucher to his former chief. I have here sketched a picture from life, and have only omitted the name of the narrator of the story. It is by no means a solitary instance which I know of.

Very apt indeed are assistants in large studios to over-estimate the service they render, and the things of which they are capable; they imagine they can do by themselves that which their principal carries out with their aid, frequently only discovering their error when it is too late. I do not mean to warn them once for all that they must not presume to become independent. Those who do not feel competent to serve the upper ten thousand may be able to give more humble citizens what they require, and those who hesitate to undertake the direction of a magnificent studio in the metropolis may be content with the modest proportions of an *atelier* in the provinces. I have myself had pupils who were deficient in the matter of taste, and yet they make a very fair income, derived from a public which had less, and estimated highly the pictures supplied them. I also remember the circumstance of a photographer in a little provincial town doing a good business, whose comb and feather suddenly began to swell and puff out. He was the first photographer in the town of Mudborough, and, as a matter of course, the Mudburghers went mad over his pictures. So at last he became vain, and believing himself to be born for a higher state of things resolved to extend his sphere by removing to the metropolis. He was blind enough not to see that his pictures were far behind those produced in the capital; he spent an enormous sum in the construction of a magnificent studio, and then came to a brilliant and speedy end.

Those who desire to be independent should first of all test their powers very accurately, and choose their sphere of action accordingly; and, above all, they must not put their expectations too high. In order to attain to genuine success in photographic portraiture a multitude of various qualities combined are necessary, such as artistic knowledge, natural aptitude, technical skill, presence of mind, energy, business knowledge, and unflagging industry.

\* *Photographisches Notizen.*



# The Photographic News.

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## NEW MODE OF REPRODUCING NEGATIVES.

If photographers perfectly understood their own interests, the multiplication of negatives would be a familiar practice, and the best and simplest means of effecting such multiplication a subject of the most vital interest. No photographer should print from a valuable negative until he has secured duplicates of it as nearly as possible equal to the original. Of all the works issued from the press illustrated with woodcuts, there is scarcely one, perhaps, in the present day in which the original wood-block is employed to print from, a reproduction in electrotype being universally obtained and printed from the original engraving on wood being retained for making further electros; and it is only where a very choice edition is required on the one hand, or where the matter is very unimportant on the other, that the original wood-block is used in the ordinary printing operations. The same conditions ought to exist with the photographer. His ordinary every-day negatives, from which a dozen or two copies may be required, and no more, would probably not be worth the trouble of reproducing; but in all cases where a fine negative of a valuable subject has been obtained, whether in portraiture, landscape, or pictorial study, the first step should be to secure good duplicates—to secure safety in the first place, and aid in rapid printing on the other. Already some very excellent modes of reproducing negatives exist; but we are about to refer to another which seems to possess some advantages over all which have been described.

An article in our last, by Herr Obernetter, describes a process worthy of the most careful attention; and since it may easily be overlooked, as referring to something with which many photographers are not very familiar, we again call attention to the method described, and its advantages. The method Herr Obernetter has worked out is practically the same as Joubert's enamel process, and, besides excellence of result, it possesses the advantage of extreme simplicity. Unlike most other methods of reproducing negatives, it is a direct process; the negative is produced at once from a negative without the intermediate aid of a transparency. It gives the operator a singular amount of control in modifying the character of the reproduced negative if he wish so to modify it, not merely in making it more or less soft or vigorous, but in varying the distribution of light and shade upon the background and other flat portions of the picture. It is not simply a suggestion, but a process which has been thoroughly worked out, Herr Obernetter having reproduced by the plan in question no less than two thousand negatives during the last three years, many of them of very large size, some of them nearly

thirty inches long; and he described the results as so perfect that the eye of the most practised photographer is frequently unable to distinguish between the original negative and the duplicate. The chief difficulty which will seem to arise will consist in the unfamiliarity of the operations and materials to many photographers. Those who have tried the various powder carbon processes and powder enamel processes will probably find no difficulty at all; and photographers generally will find no difficulty which patience and experience will not readily overcome.

The method is worked in the following manner: a plate of glass—patent plate with a clean perfect surface—is taken to the dark room, and coated with a syrup-like solution prepared as follows:—

Dextrine ... ..	1 drachm
Ordinary white sugar ... ..	1½ "
Bichromate of ammonia... ..	½ "
Water ... ..	3 ounces
Glycerine .. ..	2 to 8 drops

This solution is filtered, and may be kept ready for use without deterioration for a few days. The plate, being coated, must be placed in a horizontal position in a drying closet, or some suitable place free from dust, to be dried at a temperature of from 120° to 160° Fahrenheit. It is then placed under the negative at once in a suitable printing-frame, and exposed to diffused daylight from ten to fifteen minutes, according to the density of the negative. This exposure will produce a visible image, brown upon the yellow film. It is now placed again in the drying closet, and allowed to gain a temperature just a little higher than that of the operating room. It is then removed to the dark room again, and laid upon a piece of white paper, which permits the progress of further operations to be seen satisfactorily. The image already formed upon the sensitive surface is now to be brought out and intensified to the required extent. To make the matter clear to those who are unfamiliar with the operations, we should explain that the film of dextrine and sugar is of a sticky or adhesive nature. Where light acts upon it through the negative, it becomes hardened, and loses this sticky character; where it is protected from the action of light by the dense portions of the negative it retains its sticky character, and retains or loses the sticky character in the precise ratio of the action of light through the various gradations of the negative. In producing enameled a transparency is used instead of a negative, and a ceramic powder is applied; in producing carbon prints a suitable pigment in powder is applied. But in reproducing negatives, a negative, of course, and not a transparency, is employed, and finely powdered graphite, or blacklead, is used. This is applied with a large camel's hair brush, gently spreading the powder all over the surface, to which it adheres in due gradation. And it is at this stage of the operations that any modification in the character of the negative may be secured. Assuming that a plain even tint prevails in the background of the negative, this may be modified, and varied degrees of light and shade secured. This is effected by applying the powder more heavily or more lightly, as may be desired. Breathing on the surface will increase its adhesive quality, and permit more powder to be heaped upon it; and, by applying the powder freely or sparingly, considerable variety of effect may be produced, and errors of exposure may also be modified by similar treatment. When the desired result is obtained, the superfluous powder is gently dusted away, and the film is coated with plain collodion of strong body and tough character. Equal parts of ether and alcohol, and about ten grains per ounce of pyroxyline, have been found suitable by Herr Obernetter. When this is well set, or in some cases when it is dry, the edge is cut round with a sharp knife, and the plate is placed in water. In a few minutes the film leaves the glass, and is turned over by the aid of a camel's hair pencil, and lifted out of the water on the sheet of glass, and is spread by gentle manipulation evenly on



the glass by means of the camel's hair pencil, and is then coated with a solution of gum arabic, ten grains in an ounce of water, and allowed to dry spontaneously, and may be varnished in the ordinary manner.

Some other details may be found in Herr Obernetter's article in our last. We have confined ourselves to briefly re-stating the general details as simply as possible, in order to refer to points of manipulation with which our experience in the powder process had rendered us familiar. The process appears to be eminently promising: it is certainly easy, and whilst it appears to be the shortest mode of reproducing negatives which has been proposed, it certainly gives the operator more control over the character of the results than any process we know of.

### A NEW ENCAUSTIC PASTE.

M. CLEMENT SANS describes in the *Bulletin* of the French Society a new encaustic paste, said to possess many valuable qualities. He refers to the formula of an encaustic paste by Herr Grune, which we first published a few years ago. It consisted of Marseilles soap and white wax. M. Clement Sans says:—

"This composition spreads with great facility, and yields a good polish: it possesses, however, the inconvenience of scratching the albumen film, and has, moreover, a strong odour, which after a time becomes quite insupportable.

"I have modified this encaustic paste, and as it is now composed, no fear need be entertained of the surface of the print being damaged. The odour is, moreover, very agreeable, and it gives a more brilliant polish. Here is its composition; viz:—

Gum arabic, powdered ... ..	2 parts
Sugar candy, powdered... ..	5 "
Transparent glycerine soap, finely rasped	10 "
Water ... ..	quant. suff.

"The water is put in to moisten the soap and to dissolve the other ingredients. Afterwards there are added ten parts of white wax finely scraped.

"The paste is heated upon a sand bath until it reaches the boiling point, care being taken to stir the mixture continually, to prevent its burning. It should be contained in an earthen vessel, large enough to hold five times the quantity. A brown glazed coffee pot will answer the purpose very well. After boiling for a short time and being well stirred, it is poured into any suitable receptacle to cool. When cold, the encaustic paste should have the consistency of pomade. It is applied to photographic prints with a rag or tuft of cotton wool, in exactly the same way as other compositions of like nature."

### MEASURING RAPID EXPOSURES.

AN instrument has been invented by MM. P. Champion and H. Pellit for the purpose of measuring or estimating the duration of exposures too rapid for ordinary counting. The instrument, described in the *Bulletin* of the French Society, is composed of two distinct parts: 1, the contact apparatus upon the lens; 2, the registering apparatus.

The contact apparatus is formed of a lens cap working by the aid of a lever. Opposite to this lever, a little metallic appendage upon the cap completes the electric circuit. The electric current does not pass so long as the sensitive plate is sheltered from the light, but as soon as the cap is removed the electric circuit is completed. It remains, therefore, to register this action of the cap, which is done by the second portion of the apparatus, composed of a clock-work pendulum movement, the rapidity of which may be varied according to circumstances. This mechanical arrangement sets in action a metal drum, the axis of which is in communication with the negative pole of a battery.

A peg fixed upon the wooden bar which supports the

apparatus carries at its extremity a loose iron wire, the point of which rests upon the drum, whose rapidity of revolution has previously been determined.

The drum, or disk, may have a diameter of eight centimetres, and be set going at a speed of half a revolution per second, or at the rate of twelve centimetres, or one hundred and twenty millimetres, in that period. Upon the drum is placed a band of paper impregnated with a solution of ferrocyanide of potassium and nitrate of ammonium, the surface being always kept very moist.

The point of the iron wire is in connection with the positive terminal of the battery by means of a separate conducting wire in front of the cap.

Let us now suppose the apparatus at work, and a sensitive plate in the camera with the lens fitted as above. On removing the cap by the aid of the lever, to allow the light to act through the lens, we shall complete the electric circuit, and the iron point will trace a blue line (in Prussian blue) upon the drum, the mark being prolonged as long as the lens is uncovered. As soon, however, as the cap is re-adjusted, the electric current will cease to pass.

In this way we shall produce a line which may be measured as soon as the paper is removed from the drum. If we suppose that the apparatus was destined to give a rapid exposure, and the drum was revolving at the rate of once in three seconds—or, in other words, at the rate of eight centimetres in a second of time—at the time of the experiment; and if we obtain a blue line, traced during the exposure, measuring six centimetres in length, then we know that we have allowed the light to act upon the plate for the space of six-eighths or three-fourths of a second. If the exposure had been less rapid, and a line of twelve centimetres had been registered, then we should know that the time given to secure the negative was precisely a second and a-half.

In this way it is possible to estimate with the greatest precision the duration of an exposure of the plate in a camera, and to arrive at results quite independent of the operator.

[As we pointed out last week in the account of Lord Lindsay's expedition, that nobleman has already seemed an electric recording apparatus, no doubt similar in principle to that here described, for his observations of the transit of Venus.—Ed. P.N.]

### ON THE ELIMINATION OF HYPOSULPHITE FROM NEGATIVES.

BY HENRY GREGSON.

MANY of your readers have, I presume, been exceedingly annoyed by the loss of valuable negatives by crystallization, that from haste or other causes have had insufficient washing, after fixing with hyposulphite of soda, both before and after varnishing. Sometimes it is years before this is perceived. It generally first shows itself in the thick edge of the film, where a decomposition of the varnish shows the presence of the enemy. Sometimes it appears in small points over the negative, spoiling every print, for which the paper is often blamed, and which re-varnishing will not always remove.

I have for some years used the following method of decomposing the hypo in the film, and have not lost a negative from crystallization since. My immunity from the cracking of varnished films of late I partly attribute to this method. Make a stock solution—

Iodine ... ..	30 grains
Iodide potassium ... ..	40 "
Water ... ..	5 ounces

For use, to one part of this add four parts water. Wash the negative as usual, and pour on this solution similar to developing, when, if hypo is present, a milky precipitate is produced, and, on returning it to the developing glass, the deep sherry colour which it has will be found to have disappeared. A second application, after slight washing,

will be found to retain its colour. After a rinse to remove the iodine water, the negative is completely free from hyposulphite, and no fear need be entertained of crystallization, either before or after varnishing.

I should state that this makes the negative more dense, the iodine exercising a powerful toning action; but the half-tones are equally strengthened, so there is not the risk of hardness being produced as when an intensifier is used. This intensification may be carried still further by exposing it to the sun's rays before drying.

I have found no change of intensity on varnishing, nor after being put away for years; neither is there any contraction of the film from its use.

The stock solution is the best plate-cleaner I have ever used; I have not had a single dirty plate since using it. Although iodine is somewhat expensive, it will not be found so in use, as but a small quantity is employed. Once used, it will not be forsaken by those who, like myself, are old-fashioned enough to prefer a clean plate to an albumenized one. It may be used for removing stains from the fingers, which it does equal to cyanide, without its danger; the colour of it may then be removed from the fingers by a strong solution of hypo. In fact, it is a universal scouring or cleansing agent for the photographer.

### HASTY NOTES OF A SCRAMBLE THROUGH HOLLAND.

BY A. HARRISON.

THE land of the thrifty Dutchman does not offer very promising features to a photographic tourist whose ideas of the picturesque are confined to the beauties of nature, unless, perchance, he is content to substitute a forest of windmills for one of trees, or a spick-and-span looking cottage, radiant with paint and varnish, for the tumble-down shanties which are usually associated with rural scenery. However, if Holland is too flat and bare for fine natural scenery, the artist will find abundant work in portraying the curious characteristics of Dutch life: the extraordinary appearance of some of the towns, whose very streets seem to be full of shipping; the curious costumes worn by some of the women; and the remarkable means used to stop the encroachments of the sea, cannot fail to attract attention.

One morning in the early part of last October we steamed slowly down the Thames *en route* for Rotterdam. The journey to the mouth of the canal occupied about twenty-nine hours, and, with the exception of some brilliant meteoric showers in the early part of the evening, was about as dull as such aquatic trips usually are.

The most striking thing, on arriving at the entrance to the canal, is the means used to form an embankment. Wooden piles of about four inches diameter are driven into the mud at distances of about six inches apart, and between these are laced in different directions osier and other twigs. Upon the top of all is spread a layer of clay and earth. This kind of embankment seems more wonderful when we remember that nearly all the rivers and canals, and a great portion of the seashore of Holland, is protected in a similar manner.

It was rather dull work steaming from Hellevoetsluys to Rotterdam. The vessels are compelled to travel at greatly reduced speed, and stoppages are not unfrequent.

I can scarcely describe my first impression on seeing Rotterdam. Perhaps I shall be correct in saying that it seemed just the reverse in appearance to large shipping towns generally, for nowhere else do you see the shipping so thoroughly intermingled with the houses: and I think I may safely say no other shipping port presents so clean, smart, and cheerful an appearance. There are said to be as many canals as streets, and the whole town seems to be formed of quays. The photographer will find plenty of work for his camera in depicting Dutch river life. Most of the canal banks are planted with trees, which give them

a very picturesque appearance. The market is held on a canal, on the wide bridge of which stands the bronze statue of Erasmus. The high street is said to be built on an enormous dyke or dam.

The gaily painted and curiously built barges which may be seen here by the hundreds (I think I may say thousands) are externally pictures of cleanliness. The owner and his family, with the farming stock, consisting of ducks and fowls, and sometimes a pig and a cow, reside on board *en permanence*, travelling about from town to town, earning a living in much the same way as our country carriers.

On the outskirts of the town we noticed the neat, trim, and smartly painted summer houses (*huizen plaatsen*), or, as they are called, country seats, of the citizens. They are mostly situated on the borders or in the midst of the most charming of trim *parterres*, which would, perhaps, be more effective if less strictly geometrical in the forms of the beds, trees, &c., which give the gardens more the appearance of a piece of brilliant stage scenery than a natural landscape. One great failing in the summer houses (to English ideas, at least) is, that they are invariably erected on the margin of or over some vile stagnant ditch or pool, luxuriant in duckweed and offensive odours; but the Dutch ladies sip their coffee, and the men enjoy their cigars, ignorant or ignoring the existence of the poisonous atmosphere around them.

The carts for heavy burdens as often run on sledges as on wheels; and a little barrel of water is placed in the front, the drippings from which sprinkle the pave and diminish the friction.

The little mirrors fixed outside the windows of the houses, to enable the ladies to satisfy their curiosity of the passers-by without being seen, appeared to be more plentiful in Rotterdam than in either of the other towns we visited.

Leaving Rotterdam, with its curious admixture of streets, canals, ships, houses, and trees, we started by rail for Amsterdam, which city we reached in about three hours. On nearing Amsterdam, the number of windmills is most striking. They are massed together like a forest of trees. They are used by the Dutch for the same purposes as we use the steam engine, but chiefly for pumping and regulating the flow of water in the numerous canals, many of which are below the lowest tide level. We drove through the city from the station to the Old Bible Hotel, an establishment which quite bears out the recommendations of Murray and Cook.

Our first visit in Amsterdam was to the Museum of Pictures, situated on one of the quays. "The City Guard," by Helst, is the finest in the gallery. Amongst others we particularly noticed some very interesting delineations of every-day life, and amusing pictures by Teniers and Janot Steen. After leaving the picture gallery, we took a rambling walk about the city, passing the naval school, in the yard of which is a full size and fully rigged ship. Its appearance, towering above the wall that separates it from the street, is peculiar.

Our next visit was to the Crystal Palace, a building modelled after our own, only on a very much smaller scale. It is used for concerts and plays, and will hold a great number of spectators. On leaving the Palace, we waited to see a funeral cortege pass. The dress of the undertakers is peculiar; it consists of a three-cornered cocked hat with very long hat-band, a bag wig, velvet knee breeches, silk stockings, and low shoes with large buckles. The churches we visited were very plain; one had a fine set of bell chimes, and the other a finely carved pulpit. Both had many defaced monuments, some of which were, no doubt, once handsome.

We walked down the Jew's quarter of the city, but saw nothing more distinctive than is to be found elsewhere. There were, apparently, the same old clothes, odds and ends, and other lumber that one sees in London haunts. Crossing what is called the High Bridge over the Amstel,



and from whence a very good general view of the city could be taken, we walked on to the Corn Market. The square in front of the market house was lively with vendors of goods of every kind. There were stalls of pots and pans, old and new clothes, comestibles of various kinds, &c. We secured a view of this spot before we left.

Our experiences of Dutch sweetmeats may be a caution to others. Seeing some tempting white sugar-candy in a shop window, we invested in a quarter guilder's worth. Judging from the quantity we obtained for our money, we concluded that sugar was cheap in Holland. However, upon tasting it later in the day we discovered, greatly to our disgust, that we had purchased about two pounds of common washing soda, which was so highly crystallized as to look like our own white candy. No doubt the shopman thought the English a cleanly people to require so much soda.

Our next visit was to the Palace, situate in the "Dam" (a large square). It is said to be built entirely on piles (about 14,000). It is a large and rather imposing structure. It contains a large hall lined with white marble, and over the entrances to some of the apartments are some well executed and highly interesting subjects in bas-relief. Several of them represent by allegory the purposes for which the court they are in is used. The Bourse is nearly opposite to the Palace, and is comparatively a modern building.

Some of the canals in Amsterdam run close to the walls of the houses, as in Venice. The windows in the morning room of the Old Bible Hotel opened directly upon the water without so much as a ledge or step between.

The costumes of the boys belonging to one of the orphan schools is peculiar. They wear a coat half of which is red and half black, with caps to correspond. Those of another wear red, white, and black bands on their left arms.

It is said that there are over three hundred bridges in the town, and that if the sluices or floodgates were to fail, the whole city might be submerged. Allowance must, however, be made from such a statement. Most of the streets are free from heavy traffic, as great weights are chiefly conveyed by water.

Leaving Amsterdam, we made a short *detour* to Utrecht before visiting the Hague. The view from the top of the cathedral gives one a capital idea of Holland. It is said that twenty large towns can be descried. The effect of the immense network of canals to be seen gives the country somewhat the appearance of having been overspread by a huge cobweb. As is often the case in Continental churches, the sexton resides half-way up the tower. We found him an amusing old body. There are some very interesting tombs in the church, but they are sadly mutilated. The Mall consists of rows of linden trees, said to reach for half a mile. The Jansenist Bishop Remkens resides in the city. It is only here that the sect exists in large numbers (about 3,000).

Taking the rail back through Amsterdam, we reached the Hague about four in the afternoon, and put up at the Hotel Vieux Doelen, a place which is fitted up with great regard to English comfort. The remarkable feature about the Hague is that the water, instead of flowing into the sea, flows from it. Windmills on the road to Scheveningen raise the water from the dunes into an almost stagnant pool called Vyverberg, from whence it finds its way very slowly into the canal which is the high road to Delft. At Delft it is again pumped up and made to flow into the Maas somewhere above Rotterdam. The collections of pictures at the Hague surpass those of Amsterdam. The gallery consists of nearly all Dutch masters. "Potter's Young Bull," "The Anatomical Lesson," by Rembrandt, and Raphael's Transfiguration, are most notable. The collection of pictures in the Royal Palace is even more choice than those in the Museum, and our only regret was, that

inexorable time would not allow of our taking more than a cursory glance at them. The curiosities from China and Japan we did not attempt to see, but the collection is spoken of as being one of the finest in the world.

A short drive from our hotel took us to the place known as the House in the Wood. The trees that surround it are almost the only ones in Holland that are not trimmed into grotesque shapes. The Dutch try to improve nature by trimming the tops of their trees into queer shapes, and painting the trunks with bands of various gaudy colours. On our return we passed the Prison Gate (Gevangspoor): it is a very quaint and antique building, and it is said prisoners confined therein were, even at the close of the last century, subjected to tortures rivalling those of Venice. The Gothic Hall in the Binnenhof is a handsome place; the roof is pointed, and is supported by a framework of oak. I think I noticed three or four bronze statues in different parts of the Hague as we drove about, but I cannot remember any particulars of them.

Near our hotel lived a number of tame storks. They walked about the markets among the people as readily as do our tame ducks and hens; it looked rather strange to see such tall birds domesticated. The tramway took us to the fishing village of Scheveningen, about three miles from the Hague. The principal object of our visit here was to see the curious costumes of both men and women. The women have a kind of skull cap of gold or silver, the tapered sides of which project beyond the ears. To this is attached a spiral wire of about three inches high, tapering to nothing at the top; hung on the lower coils of this are a pair of very long and large pendants like earrings. The metal skull-cap is covered by a neat lace cap, and a large bonnet, which is more like a coal scuttle in size and shape than anything I know of, covers the whole, making up one of the most extraordinary of European head-dresses. The men affect the large loose trousers, with blouses of various colours; in fact, gay colours are worn by men and women alike. Carts drawn by dogs convey the fish to the towns, and the owner usually indulges in a ride home. Rather a novelty to English eyes now are these one or pair dog conveyances.

Our return journey to the Hague was made by gondola. This mode of locomotion, although rather tedious, is very pleasant for short trips.

The next day we returned to Rotterdam, and from there bid adieu to Holland. Our route to the sea was through what is called the New Cut, which avoids the bank at the entrance of the Maas. We found ourselves in London within a week from the time we started on our very enjoyable scramble through Holland.

## THE IMPEDIMENTS OF THE MAGIC LANTERN

BY JAMES MARTIN.

AN article upon this subject appeared some time since in a contemporary journal, which, had the writer been as good a mechanic as he was ingenious, had never been written. He there laid down as an axiom that the weights used to produce a flow of the gases from their bags were the great impediments of the dissolving view apparatus, and complained of their being most disagreeable travelling companions in a cab. In this respect I should consider him right, although I never had occasion to put their social qualifications to the proof, as I have always found that they could be borrowed from any tradesman dealing in heavy articles.

It has not been the weights, but the pressure-boards that I have found cumbersome and unwieldy, and could they either be reduced in size or done away with altogether, a very desirable improvement would be effected. Some considerable degree of weight is really required to keep the bags steady in their places, otherwise a slight touch might disturb them, and in all probability put out the lights.

The writer in the article alluded to proposed to substitute for weights an elastic band capable of producing a pressure of 112 pounds; this, fastened to the bottom board, was to pass over iron levers at their ends, to be drawn tight by a windlass placed on the upper board.

It does not require much depth of thought to discover that such an apparatus as this would require constant attention, and be very likely to disturb the equanimity of the exhibitor's temper, by the constantly fluctuating current of gas frequently leaving him and the spectators in the dark. I do not perceive how any alteration could be effected for the better in the arrangement at present used with the wedge-shape bags. Levers might certainly be fixed to the ends of the upper pressure-boards, to which a much smaller degree of weight than is at present used would have the same effect, but in that case the opposite ends of the under board must be firmly screwed to the floor, or the whole would topple over. Other considerations would also render this plan very undesirable.

The suggestion I have to offer, which would, in a great measure, do away with both pressure-boards and weights, is this:—Let gas-bags be of a square form, their sides made of mackintosh cloth, as at present used, but contrived to fold plait similar to the bellows body of a camera, or, perhaps, more properly speaking, like that of an accordion. The tops made of wool about an inch in thickness, the bottom also made of wool, might form a shallow box, so that when the bag was empty and lying closely folded, the whole would appear like a box, the bag being inside of it, which would thus be preserved free from injury; it could also be locked up if required.

Open out an accordion to its full extent, then stand it on end; it will be found that it will not sink down equally, but that the upper end will show an inclination to topple over: so would that of the gas-bag—if not prevented, any weight placed upon it would slide off; therefore two rods, about three-quarters of an inch in diameter, and of a sufficient length to rise some inches above the bags when fully distended with gas, must be made to screw into the centre of two opposite sides of the bottom case, so that they may stand vertically and opposite each other; a cross-piece must be so adjusted as to bind their upper ends together; in the centre of this must be an orifice through which another rod may slide easily. The lower end of this must be firmly screwed into a socket situate in the centre of the upper board, which must have friction rollers to prevent its sides jamming in its descent against the up-rights; four and seven-pound weights being placed upon the top board, and as near its centre as possible—the bag, of course, first being filled, and the tap opened. The apparatus, if properly constructed, will be found to be everything that can be desired.

A bag of this shape, two feet square, and, when extended, three feet high, will contain twelve cubic feet of gas, far more than sufficient for one evening's entertainment, and exceeds the quantity generally contained in the largest size gas-bags. The weight having direct pressure, much less is required, thereby lessening the strain on the bags. It will be seen, also, that the portability of the whole is greatly increased, as besides the bags themselves, there are only eight slight rods, which, packed together in a case, will not take up more room than a fly fishing-rod. Where expense is not an object, the whole could be nicely got up, and present a really handsome appearance.

#### SOME EXPERIMENTS WITH DEVELOPERS.

BY F. WALLER.\*

HAVING, after trials of various other reducing agents, concluded that the iron, or those based upon iron, were the better, I shall confine myself to iron developer, with some trials of the various additions recommended.

The double sulphate of iron and ammonia did not present

any advantages over protosulphate, after repeated trials at various strengths. Pyro or gallic acids, for the wet process, are slow in comparison with iron. Epsom salts was tried as recommended, without any marked effect; indeed, beyond possibly neutralizing some portion of the acid, I can see nothing to be gained by its addition. A smaller quantity of acid would, I believe, produce the same results. Acetate of iron worked well, and very suitably for ferrotypes, giving excellent whites. It is prepared by adding one-half the quantity of acetate of soda that there is iron used.

The well-known method of keeping a stock solution saturated or very strong of sulphate of iron in water, and testing with an hydrometer, is handiest, the oxydization being of no harm, if not of some use. As a gauge for those who have never tried this simple plan, an ounce of iron to a pint of water will test about twenty grains strong.

Alcohol is unnecessary if the bath is in the proper trim, and acid should be used sparingly; the less the better. There is no advantage gained by a strong developer, and the results are uneven and harsh. As a rule, for the plain iron developer fifteen grains strong, one ounce of acetic acid to every sixteen ounces of solution, and mixed immediately before use.

The formula which was found to possess the most advantages was an original one, I believe. To every sixteen ounces of iron solution, fifteen grains test, add two ounces of saturated alum solution, and from one-half to one ounce of acetic acid. The alum will be found to increase the reducing power, and the development may be safely carried to almost any extent without danger of fogging. Besides giving a very soft, clean effect, it is useful for children and short exposures, and on white draperies a decided success.

A new developer is what we want, and who will step forward and supply the want? Instantaneous portraiture lies in that direction. In the meantime, let us try to improve upon our old stand-by, sulph. iron. Alum will be found, I believe, a slight step in the right direction.

#### CURIOUS CUSTOMERS.—THE HOLIDAY GROUP.

BY WILLIAM HEIGHWAY.\*

THE holidays! Happy time, abounding in smiles and fun, good humour and frolic. Our business is with the family group—quite enough to engross all our attention, we can assure you.

To see them as they troop in is a goodly sight—that is, to any other than a photographic eye, for we are a grumbling, morose lot! There is the mother, fond, foolish and sweet tempered; but all her best holiday humour is tried by the antics of little Frank, who is—well, all children are troublesome; and papa has under his charge little Bessie and Georgie. Aunt Maria has in tow Harry, the second in age and the first in mischief. Annie, who is quite a young lady, possessing a sweetly preposterous sense of importance as the eldest of the family, distributes herself generally in attending to the wants of her brothers and sisters. Mr. Richard, in stick-up collar and a high hat, much too important to walk with the youngsters, brings up, in dignified form, a solid rear guard, he and his cane in company.

Well, there are nine of them; and will Mr. Photographer please to place them in nice positions? for this is a most important picture, including all the family. Two or three little tears trickle down mamma's cheeks as she thinks of little Reginald, who was included in last year's picture, and is now among the flowers gathered by the Divine hand. She wipes her eyes with a subdued happiness as she thinks of the blessed promise of the season.

Mr. Photographer, who has had the prospect of this group weighing like a nightmare on his mind for the past two days, groans as he looks at the unpromising material, and finds all his plans for grouping vanish into thin and empty air. However, he knows it has to be done, or he loses a good order; and heaven knows he cannot afford to do that

\* *Photographer's Friend.*



in the present panic times; so at it he goes with commendable zeal, and meets with gratifying success. The difficulties are innumerable, but one by one they go down before his perseverance and skill like ten-pins before a well-directed ball. Certainly, Mr. Richard cannot be induced to forget his collar, which he nervously twitches every half minute; and it might be better if Frankie would not persist in swinging his legs, but that is overcome by resting those restless mottled extremities on a stool. There are, too, some misgivings that Harry's love of mischief will evince itself at a momentous crisis and ruin all; but papa has angrily warned him of dire consequences, so that now he is as sober as a judge—in fact, rather more so, as high judicial dignitaries like their little joke.

"Plate!" roars Mr. Photographer, in such a state of suppressed excitement that he could knock Pyro, the operator, down, if he is not quicker; and out comes the plate.

"Now then, children! Quiet as mice, my little dears. Watch for Santa Claus," says Mr. Photo, cheerfully.

"Oh! that's too thin," Harry mutters.

"Harry! don't be vulgar," papa says, with great sternness. "If you do not keep quiet I shall punish you severely."

"Am I all right?" asks Mr. Richard, with a wrench at his collar and a caress for his "moustache"—a sickly, weedy growth.

"All right now. Quite still, please," agonizedly admonishes the feverish artist.

"Just see that you get that moustache of Dick's niece and distinct, or the picture won't do," from Harry, unable to restrain his mischief-loving propensities.

"Harry, for my sake keep quiet; there's a dear boy; and do leave your brother alone," pleads mamma.

Dick mutters vengeance against his tormentor, and Mr. Photo perspires with dread for the result.

Now they're all quiet; a word of caution, twenty seconds of suspense, during which Mr. Photographer and the watchful Pyro dare hardly breathe; and just as Harry bursts into a big sneeze the cap is put on the lens—just in time. The deed is done, the slide restored, and the plate is taken into the dark-room.

"Is it all right?" asks paterfamilias, and the maternal hopes it is, for the dear children were all so good. Mr. Photo devoutly hopes all is well.

"All right!" shouts Pyro, husky with excitement.

Was there ever such good fortune? It's unparalleled! It's wonderful! Was there ever such a picture? Beautiful! beautiful!! beautiful!!! Frankie certainly moved his legs a trifle, and Mr. Richard's expression is rather of the smirk order; but the moustache is quite distinct, so he is satisfied. Every one is satisfied, especially Mr. Photographer as he sees the last of the family group trail out of the door.

## Correspondence.

### WHY THE AMERICAN PRINTS, TREATED WITH ACETATE OF LEAD, FADED.

SIR,—Allow me to state that I differ from your correspondent, R. M. S., in attributing the fading of the American prints, treated with acetate of lead, to their having been "immersed too long, or in too strong a solution of the lead salt." This might weaken the prints and give them a slaty look like an overtone print, but I question if it would cause subsequent fading.

The fading and discolouration are most probably due to the use of water containing carbonate of lime immediately after the removal of the prints from the lead solution. If allowed to remain some minutes in this water, carbonate of lead would most assuredly be precipitated in the pores of the prints; and if exposed to the continued action of sulphuretted hydrogen they would most probably fade.

I avoid this—as will be seen from my article in last week's issue—by the use of a few drops of acetic acid in the water; thus

removing the free lead in the print while in a soluble state. Your suggestion of using nitric acid would be equally successful.—  
Yours respectfully,  
HENRY GREGSON.

### CAUTION.

SIR,—Permit me to thank Dr. Vogel, of Berlin, for exposing a swindler in your last number. The individual referred to by him appears to obtain an introduction and reception among Continental photographers by the fraudulent use of my name, viz., representing himself as my *traveller*, and pretending to take orders for my lenses; whereas, the real purport of his visits is to sell his *nostrums*—such as varnishes, secret processes, and the like—at high prices.

Of course the lenses ordered of this impostor never arrived at their destination, and thus it happened that I became aware of his practices. The photographers who had been imposed upon in several instances addressed themselves to me direct, inquiring why certain lenses ordered of "my traveller" had not been sent, &c.

In reply to my questions as to the *name* and *address* of the individual who had thus represented himself, I received on several occasions the card transcribed at foot. I need scarcely say that his London address is purely fictitious.

However, to protect my own interest, and that of continental photographers, I caused an advertisement to be inserted in the *Cologne Gazette*, and also in *La Riforma*, warning the public against the purchase of spurious lenses, and against travellers, I never having had occasion to employ travellers for the sale of my instruments anywhere. A considerable time having elapsed without receiving any communication on either of these subjects, I inferred that my announcement had put a stop to these fraudulent practices; when to my surprise and chagrin, only a day or two ago the question of the would-be "traveller" turned up again, and this time he is among our Belgian friends. The already well-known address card was again transmitted to me, and I trust that this announcement will meet the eye of some of our neighbours, and prevent them being imposed upon by this impostor and quack, whose card I transcribe.—I have the honour to be, sir, your obedient servant,  
J. H. DALLMEYER.

(Address Card.)

Lack—Firniss & Harz—Fabrik  
von  
A. Genetier.  
Oxford Street, No. 29,  
London.

Vertreten-Jonston.

## Talk in the Studio.

THE PHOTOGRAPHIC SOCIETY.—The old members of council of the Photographic Society have just issued a circular to members, announcing that they have accepted the invitation of the society to resume their position as officers, in accordance with Mr. Hooper's resolution, passed unanimously at the last meeting. As they state that they will only hold office until a new code of laws is in force, when they will resign their offices into the hands of the society at large, to permit a new general election, it is probable that in the course of a month or two a completely fresh election by the votes of all the members will take place. The next monthly meeting of the society will be held on the 14th inst., when a paper by Mr. George Bruce, of Dunse, will be read, the subject being "Printing and Toning."

PHOTO-ENGRAVING.—Amongst the finest examples of photo-engraving we have seen is a portrait of Mons. A. Davanne which appears in the *Bulletin* of the French Photographic Society for February. It is produced in the establishment of MM. Goupil, and is described as the "Procédé Rousselon;" and the specimen in question, as well as another—a copy of a pictorial fan—is said to be quite untouched. The portrait is from a negative by Fritz Luckhardt, and seems to be almost faultless, both as photography and engraving, being at once delicate and forcible, having the general character of an exceedingly fine mezzotint engraving, to which, indeed, the copper plate from which it is produced bears a close analogy. The original idea of the process which M. Rousselon has worked out is claimed, we understand, by Mr. Woodbury. The basis of the process is a gelaïne relief in which the gradation possesses a granulated character; from this the copper plate is produced, the granulated gradation giving ink-holding qualities to the image.

INDECENT PHOTOGRAPHS.—The police on Monday seized 100,000 indecent photographs on the premises at 20, Bloom-

field Terrace, Pimlico. Some of the more objectionable portraits were recognisable as those of the owner of the house, his wife, and two sons. At Builders' Yard, Pimlico, the police subsequently seized 5,000 photographic negatives of an indecent nature.—*Telegraph*.

**OBJECTING TO PRISON PORTRAITURE.**—We learn from a provincial paper that a convict at Leeds objects to the operations of the prison photographer. The *Darlington Times* says:—"Mr. William Jones thinks there is reason in all things, and that because a man happens to be a convicted pick-pocket he should not necessarily be compelled against his will to have his portrait taken. From a circumstance which has befallen him, it would seem that the authorities at the Leeds Borough Gaol have no respect for the liberty of the imprisoned subject. Mr. Jones declined to sit, and the authorities tried to make him, and Mr. Jones kicked over and broke the camera and a mirror, and now the Leeds magistrates have sentenced him to an additional two months' imprisonment for taking the only means left to protect himself against photography. Mr. Jones bears no animosity to the camera as a camera. What he objects to is being unnecessarily incommoded. As he explained to the Bench, he had already sat for his photograph to Mr. Swann at the Town Hall, and an impression might have been obtained from that gentleman if it was so urgent to procure one. So it might."

**THE TRANSIT OF VENUS.**—*Nature* says:—"Some carpenters are at present engaged in building in the Jardin de Luxembourg at Paris a photographic studio, for the use of the photographers who are to be sent out with the Transit expedition. The observations are soon to begin, and will be under the direction of M. Fizeau, member of the French Institute; but that gentleman will not leave Paris to follow the operations."

**PHOTOGRAPHY IN ART SCHOOLS.**—A new art school is in course of formation in France by the Marquis de Chennevières, Director of Fine Arts, which is intended to be intermediate to the schools already existing, and in which the students will be taught wood-carving, painting on glass and porcelain, artistic photography, picture-copying, &c.

**KENNETT'S GELATINE PELLICLE.**—Mr. Kennett says, in relation to his gelatino-bromide emulsion:—"I find as the light increases in power, and the temperature becomes higher, that the sensitiveness is becoming like a restive horse, and requires curbing by using a more powerful restrainer; and, instead of a quarter of an ounce of bromide to eight ounces of water, I am now using three drachms; and it will be found a great improvement to add to the pellicle itself about half a grain of the bromide, and four grains of loaf sugar. The sugar and bromide I add to the water in which I dissolve the pellicle; it then gets thoroughly incorporated with it. I find I can obtain great control over the development, with increase of density, and apparently no loss of sensitiveness."

**CLEMONS' PRECIPITATE FOR HYPOSULPHITE OF SILVER.**—Mr. Clemons proceeds as follows:—"To (say) twelve ounces hyposulphite solution, placed in a half-gallon jar or bottle, add from a drachm to a drachm and a-half of muriatic acid, and stir thoroughly. Settle, and add about the same quantity of sulphuric acid. Stir and settle. Take this solution to the opening of a flue, or fire-place (to carry off the noxious fumes of sulphurous gas), and add sufficient chloride of sodium (common table salt) to produce thorough precipitation. When the chemical change has been effected—i. e., hyposulphite of silver has been converted into sulphuret of silver—skim off the floating substance, if any, on the solution, and save it, as it contains a small quantity of silver. Pour off the solution, and the precipitant, which is now of a waxy consistency, may be refined at pleasure."

**SIR GARNET WOLSELEY.**—The indebtedness of the public for its acquaintance with the appearance of celebrated personages to photography is thus testified by the special correspondent of the *Daily News*, in a notice of the review at Windsor of the Gold Guard troops:—"The crowd does not yet know Sir Garnet's face or appearance. He was for an immense time riding about on the ground without being recognized in the least. I suspect that there has been hardly time for the admirable photograph of him which has been recently executed to get about in the outskirts of London; and I hear that there have been many moans from photographers that Sir Garnet's intended rapid departure has not allowed him time to sit to them."

## To Correspondents.

**G. A. T.**—One of the simplest modes of avoiding the expense of purchasing a large bath is to use a flat dish, which answers well; but if you wish for a wooden upright bath there are various methods of using wood for the purpose. The pitch-lined baths may answer, as they have been said to do; but, personally, we have had no experience with them. The cheapest mode of making a trustworthy wooden bath that we know, consists in applying several coats of shellac varnish to the inside, the varnish being made by dissolving shellac in wood naphtha. The first application may be of a thin varnish, containing about twenty grains of lac to the ounce. This should be allowed to saturate the wood; and, finally, a thicker varnish, containing about forty or fifty grains per ounce. A better wooden bath still is made by lining it with pure sheet india-rubber. This is easily done by preparing before the bath is made. The pieces of india-rubber are cut for the bottom and sides of the bath, just sufficiently large to wrap over the edges, and the pieces for front and back just the size of the wood. They are cemented each on to the piece of wood it is required to cover, and then the pieces are screwed together; the india-rubber being between all the joints serves, by its elasticity, to make the bath water-tight when so screwed. It is important to avoid vulcanized india-rubber; the pure article must be employed.

**CONSTANT READER.**—You will find excellent advice on the subject of building a studio in Mr. Fry's recent articles on the subject. Bigelow's book is chiefly intended to teach principles of lighting. We do not know anything more of his studio than has already been published, but it is probable that if the proportions were stated you would find them much larger than you require. So far as we remember, the details given in an article in our last volume describe Mr. Bigelow's skylight as being eighteen feet square. 2. Undoubtedly the authorities can prohibit the practice of photography on Sundays. There is a law in existence which forbids any man following his calling on Sundays. It is not always enforced, but the authorities have the power to do so.

**E. J. S. II.**—The double decomposition of the salts produces sulphate of lead and acetate of soda. 2. Sulphate of lead is very sparingly soluble in water, but the presence of a little nitric acid enables the water to dissolve it more freely. 3. We cannot tell you the precise number of prints which should be passed through the lead solution before discarding it.

**OXONIENSIS.**—The chief defect of pictures taken with wide-angle lenses is the effect of violent perspective, which is due rather to the short focus of the lens in relation to the size of the plate. When they are used for smaller plates, the relative shortness of focus no longer exists, and the defect vanishes. With the lens of medium angle you mention we are not familiar, but we have no doubt whatever that it will give pictures on eight and a-half by six and a-half plates, quite free from exaggerated perspective. Of course it is easy in all cases to secure the true effect of perspective by holding the picture at a distance from the eyes equal to the equivalent focus of the lens.

**R. F.**—Platinum may be used for toning prints. Its tendency is to give a cold black tone, but it has no superiority over gold. We have described the results obtained by salts of several other noble metals.

**A. CONSTANT SUBSCRIBER.**—Your landscape lens will answer the purpose for an open-air group. If the day is bright, you will probably be able to secure it with a very rapid exposure. Something depends on the excellence of the lens as to the size of stop you will require to secure definition throughout, but if you have any control over the arrangement of the group, you should place the figures so as to suit the lens, and so aid in getting good definition. The collodion you mention will answer well. An ordinary twenty-grain iron developer will answer every purpose. If you are not very familiar with open-air work you will find it desirable to make one or two experiments beforehand, to enable you better to understand conditions.

**JOHN WILSON.**—Of the lenses you mention, the only one suited for taking groups of four persons on card size in your studio is the first, as both the others would be, we fear, too long in focus; you would not have length enough to get the figures sufficiently small to get four on a card. For general purposes, large heads, and half and full-length cards, we should have preferred the second you name.

**G. D. L.**—There is no really effective way of making old collodion new again. If it be thin and insensitive you cannot again give it body and sensitiveness, but you may find it useful for adding to very new collodion to give it some of the qualities of ripeness. For such a purpose, a little of a very old collodion is sometimes useful.

Several Correspondents in our next.



## The Photographic News, April 10, 1874.

### M. CHEVREUL ON THE INVENTION OF PHOTOGRAPHY.

AN essay, written by the enlightened Secretary of the Académie des Sciences, and by a veteran *savant* who has from the first taken a deep interest in our art-science, deserves the notice of every photographer. For a long time past, M. Chevreul tells us, he has intended to write the pamphlet he has given to the world, for he has always considered that the claims of Nicéphore Niépce to be one of the principal inventors of photography have not been justly recognised. The author considers that we may divide sun-painting into three main sections, and apporportion to each one an inventor, thus:—

<i>Heliography.</i>	<i>Daguerreotype.</i>	<i>Photography.</i>
Nicéphore Niépce.	Daguerre.	Fox Talbot.

And as Niépce was the first to produce pictures from nature in the camera, he should enjoy the honour of priority.

Arago, who brought forward Daguerre's invention in the Chamber of Deputies, characterised all previous efforts at sun-painting as being exceedingly defective, and possessing immense inconveniences. He ignored *in toto* Niépce's name, and Gay Lussac, who announced the invention in the Chamber of Peers, made the same omission. Indeed, although Nicéphore Niépce produced permanent photographs fifteen years before, which had been shown to many scientific men, not a soul breathed his name at this eventful moment. The invention of Daguerre was, indeed, vaunted at the expense of Niépce.

"It was in 1839 that an Englishman, Mr. Bauer, a Fellow of the Royal Society, who had known Nicéphore Niépce in 1827 in London, made known some circumstances which were greatly at variance with the statements of Arago. 'Under these circumstances,' says Mr. Bauer, 'I cannot think that M. Niépce was able only to give an imperfect idea of the matter fifteen years ago, for the specimens brought by M. Niépce, and exhibited in England in 1827 (and of which some are still in my hands), were all quite as perfect as the productions of M. Daguerre, described in the French journals of 1839, and yet this is the first time that the name of M. Niépce is mentioned.' Mr. Bauer had, in fact, seen, in 1827, what Arago had not been shown till 1839. Nicéphore Niépce, therefore, was not unsuccessful, and thus Daguerre was not the inventor of the permanent reproduction of objects in the camera. I will go further, and admit the opinion of Arago. . . . How was it, then, having shown the importance of the method of M. Niépce and the excellence of that of M. Daguerre, that he asked for a pension of four thousand francs for the son of Niépce, instead of only a pension of six thousand to Daguerre alone?"

M. Chevreul then goes on to state that, so far as he himself is concerned, his opinion has never varied on the respective merits of Nicéphore Niépce and Daguerre. He reviews the life of Niépce as depicted by M. Victor Fouque,\* and afterwards states that three things appear to him patent:—

"1. That the honour of originally discovering heliography belongs absolutely to Joseph Nicéphore Niépce, for he established, most perfectly, the conditions necessary for the realisation of the discovery.

"2. That Daguerre has the incontestable merit of substituting for bitumen of Judea, the substance sensitive to light, iodised silver, which was much more impressionable.

"3. Finally, that Talbot enjoys the incontestable merit of substituting for the metal or glass employed by Niépce and Daguerre, paper, by reason of which Daguerreotype is at the present day no longer used.

"It was Nicéphore Niépce who was the first to fulfil the former of two conditions necessary for fixing an image in the camera, viz., the employment of a substance sensitive to the action of light, which, after having been applied to a solid surface, is exposed in the focus of a camera, where an image falls on it; secondly, the employment of a light capable of dissolving away all the sensitive matter which has not been modified by light, and leaving that which has been acted upon.

"Nicéphore Niépce, after many years of experiment, gave the preference to bitumen of Judea as the sensitive body, which he applied to a metal plate, penetrating the material in the first place with the volatile oil of lavender, and then dissolving it in a mixture of one part in volume of oil of lavender, and nine parts of petroleum oil. The plate coated with this solution of bitumen was, after evaporation, exposed in the camera. All those portions of the bitumen impinged by the light then lost their solubility in the mixed oils of lavender and petroleum, and, therefore, on the plate being afterwards plunged into the oils, on its withdrawal from the camera, the bitumen not acted upon by the light dissolved away, while that impinged by the rays preserved the outlines of the image, and the modification brought about being in proportion to the energy of the rays acting upon the film, lights and shadows were obtained of different tones, which produced an image in relief.

"This was Nicéphore's method of operating; but this was not all the discovery. He said to himself:—'If the bitumen which covers the metal represents the image in the camera, should I not be able, by etching with an acid the metal laid bare by the development of the image, to obtain an engraved plate of such a nature that by subsequently removing the altered bitumen, which protects the metal from the corrosive action of the acid, the image would appear, the reliefs in the metal being the high lights, and the hollows the shadows?'"

"Experiment justified his conjecture, and a portrait of the Cardinal Ambrose was reproduced by Niépce, in 1824, upon a plate of tin."

Thus, as M. Chevreul shows, Niépce was not only the inventor of heliography, but also of photo-engraving.

In regard to the invention of Daguerreotype, M. Chevreul reminds the reader that Daguerre had no hand in the perfection of the camera and lenses employed, the construction of the former being due to Wollaston, and the achromatisation of the lenses to Chevalier. That Daguerre made any successful experiment in heliography during the lifetime of Niépce, there is no evidence whatever to show; whereas it is proved beyond doubt that the latter made his partner acquainted with every favourable result he had obtained. When the compact was made between the two, it was distinctly laid down that any invention hereafter should be made known to the public under the name of Niépce-Daguerre, and this, as all the world knows, was not the case, when, in 1839, Daguerre published his process. The agreement stated that M. Niépce, on his part, should make known all he knew, and M. Daguerre was to contribute a new description of camera and his labour. As a fact, it was only the latter he contributed, for the new camera, M. Chevreul points out, was not due to Daguerre, but to Wollaston and Chevalier.

M. Chevreul compares the two processes of Niépce and Daguerre as follows:—"The difference between the processes is this: in that of Nicéphore the image appears on treating the plate on its withdrawal from the camera with a solvent of mixed oils, while in Daguerreotype the image, before being submitted to the action of hyposulphite of soda, is first exposed to the action of mercury, which renders it visible. If the process of Daguerre is of incontestable value, and if he has recognised the sensitiveness of the iodised plate, it is also certain that Nicéphore was the first to have recourse to iodine in his heliographic work; and if he did not employ it to such an extent as

\* See "A Contribution to the History of Photography," by Mr. Baden Pritchard, page 133, vol. xvii. PHOTOGRAPHIC NEWS.



Daguerre, still for the latter the difficulties would have been much greater if he had not been aware of iodide silver having been used in Niepce's heliographic work.

"This remark alone suffices to show how different Daguerre's position would have been had he been ignorant of the heliographic process of Nicéphore Niepce, or, having known it, he had been ignorant that iodine applied to silver might contribute to the progress of heliography.

"However this may be, Daguerre has related in a letter printed in the proceedings of the Academy, on the 23rd September, 1839, how he discovered the sensitiveness of iodised silver to light, and the employment of mercury in rendering the image apparent after the plate had come out of the camera. He states he discovered the sensitiveness of iodide silver to light in the month of May, 1831, and the action of mercury vapour in 1835. This letter is far from being clear and precise, but his intention in writing it is evident: he pretended having improved the heliographic process of Nicéphore by substituting the residue of the distillation of the oil of lavender for bitumen of Judea; and in the second place he used mercury vapour with the intention of employing the iodide plate treated with mercury in order to engrave it by means of an acid. In fact, he concluded that heliographic engraving would always be imperfect. We shall see that the inventor of Daguerreotype was not happy in his conclusion; but this letter tells us that an exposure suitably prolonged of the iodide plate in the camera will give an inverse image. If I rightly interpret Daguerre's letter when he states this, he must have been ignorant of the fact that the image is already produced upon the plate before mercuric vapour renders it visible."

M. Chevreul insists very much on the fact that iodized plates were employed by Niepce, and that his use of them naturally led to their being afterwards experimented with by Daguerre. This is one more point to show how much Daguerre had to thank Nicéphore Niepce; while heliography may be considered as the original discovery of one man. M. Chevreul is of opinion that the same cannot be said of Daguerreotype, which, although when first made known was a complete and practical process, required material improvement at the hands of Chevalier, Claudet, and others, before it was quite perfect.

To Fox Talbot M. Chevreul also assigns the position of original inventor, for although several have contributed important modifications, yet photography may be considered Talbot's method still. He owes nothing to Daguerreotype, and, as M. Chevreul very truly says: "Daguerreotype appeared for several years destined to last for ever, especially after the improvements to which it was subjected. The photography of Talbot, on the other hand, received coldly at first, improved little by little, and at last replaced Daguerreotype altogether." These words, coming from so great an authority, we should never forget.

The author finally considers that to Niepce indisputably belongs the honour of having been the great discoverer of sun-painting, or heliography, for he was the first who showed the possibility of fixing an object secured in the camera.

His concluding words are: "The rapid improvement of original inventions is in the interests of society; but in recognising them, we should always speak in favour of the inventors, and place a wide interval between their merit and that of the authors of mere improvements."

#### SOME REMARKS ON THE ART OF PHOTOGRAPHING MICROSCOPIC OBJECTS.\*

It has often struck me as a curious fact that the process of taking microscopic photographs has received so little attention from working anatomists. I think the solution

of this enigma is to be found in the immense amount of apparatus which is supposed to be required. To look at Moitessier's book,\* or, worse still, at the paper by Dr. Berthold Benecke, in Max Schultze's '*Archiv*' (3 Bd. 1 Heft., 1867); to contemplate the paraphernalia there set forth—the condensers, achromatic and non-achromatic, the plate of ground glass, and the long array of apparatus—is enough to deter any one whose time is fully occupied from attempting the art. Other writers seem to require the whole force of a government establishment, a large darkened room, and a heliostat; they speak of employing a practical photographer one or two evenings a month to help them to reproduce all the more interesting of the month's observations, forgetting, apparently, that it might be necessary to copy fresh objects which would not keep until the photographer happened to be disengaged. I have found it possible to dispense with most of this apparatus, and to do the work with a microscope, an ordinary camera, and a deal or mahogany board.

In the succeeding remarks I do not think that I have anything absolutely new to give; yet there are many little processes, and, if I may use the term, "wrinkles," which would have saved me a world of trouble if I had been acquainted with them formerly, and which I hope will be of corresponding service to others who may be desirous of acquiring skill in the art; they are not to be found in books, and I have had to learn them by sheer experience. My apparatus is very simple; it consists of a mahogany board four feet in length and ten inches in width, which is made to double up in the centre for convenience in travelling; there is a slit running longitudinally from near one end to within three inches of the other; at the extremity three screws are arranged so as to fix down the microscope square to the board; taking an ordinary bellows camera, I have had the frame which carries the lens separated from that which carries the focussing glass, and fitted to a foot which can be fastened at any part of the board by means of a screw passing through the slit; the focussing frame has been treated in the same manner. The two parts were then connected by a treble fold of black calico long enough to reach from one end of the board to the other. This calico bag is kept apart by two rows of rings which run along a couple of brass rods attached one to each upper angle of the focussing frame. The whole is so arranged that the picture from the object under the microscope falls on the centre of the focussing glass, which is made by pouring a very thin solution of starch over a piece of patent plate, and allowing it to dry spontaneously in a horizontal position. When the apparatus is required for use it is placed on a table; the microscope is fixed in its proper position; the body, being arranged horizontally, is pushed through the opening for the lens in the front frame, and is surrounded by black velvet, so as to make the aperture impervious to light. The focussing frame is fixed at any point on the board, according to the magnifying power required; the fine adjustment is moved by means of a rod attached to the side of the board, the further extremity of which carries a small grooved wheel which moves the fine adjustment by means of an elastic band. The only other piece of apparatus required is a small glass cell filled with a solution of alum, which cuts off the heat rays of the sun without in the least diminishing the light. The eyepiece is always taken away from the microscope, as its presence diminishes the light and the definition, the increase in size of the image being obtained by a method of enlargement to be mentioned presently. With the above arrangement the one-eighth object-glass gives a magnifying power of three hundred and fifty diameters. The advantage of employing itself instead of having the object-glass fixed to a special frame, as some recommend, is obvious, for if anything occurs in one's researches a copy of which it would be advantageous to keep, it can be photographed at once (provided the sun

\* A paper read before the Royal Microscopical Society, by ALFRED SANDERS, M.R.C.S., F.L.S., Lecturer on Comparative Anatomy at the London Hospital Medical College, slightly condensed from *English Mechanic*.

\* "La Photographie appliquée aux Recherches Micrographiques."



shines) with less difficulty than by using the camera-lucida.

There is a good deal of trouble attendant on getting the focus properly; with the 1-5th or 1-8th and higher powers the image looks scarcely more defined on the focussing glass, when it is in focus, than when it is just out of it; a magnifying glass must be used; a watchmaker's lens, or an ordinary doublet does very well. When the object glass is just within focus, there is to be observed round the external edge of the subject to be photographed a border of white light; as the object glass is being moved away, this border diminishes in width; and just as it gets out of focus the bright border suddenly changes to a dark one. The moment must be seized when this border is on the point of disappearing, and before the dark edge is seen; at this point the object is exactly in focus. To get the best effect the adjustment for covered objects must be screwed down, and the thinnest possible covering glass (0.005 inch and less in thickness) must be employed. If this is not done, concentric lines, called interference lines, are apt to surround the subject, spoiling the effect, and damaging the negative.

I have found that no other light answers so well as sunlight for microscopic photographs. Artificial light is a delusion, with perhaps the exception of the electric light, but the trouble and expense of this precludes its employment in a private house, for at least fifty cells would be required. Magnesium ribbon gives an impression, but I have always found it impossible to get a good focus; perhaps if it could be arranged so as to give a steadier light, it might answer; Dr. Woodward appears to have succeeded with it. As before mentioned, condensers, ground glass, &c., are unnecessary, at least for the 1-8th inch and lower powers, the ordinary concave mirror attached to every microscope being all that is requisite; but even with the lowest power, this mirror should be used, as with the flat one the image of the spots of dust and other extraneous objects comes out with painful distinctness. If the object to be copied is an ordinary microscopic preparation, no especial precautions are necessary; but in cases where fresh tissue examined in fluid is the subject, it is better to paint the edge of the thin glass cover temporarily with gold size, to prevent evaporation; this is easily rubbed off after use. If the subject is not very pervious to light, a good plan is to paint the surface of the slide round it with Indian ink—in fact, to stop out all light except that which passes through the object. Hitherto I have spoken only of taking the negative; I now come to the consideration of the best way of printing. It is generally remarked that the former may have all the finest definition that can be desired, but that in the latter the greater part of this distinctness is lost. Now by the process which I am about to describe, prints can be obtained absolutely equal in point of definition with the negatives, and three or four times their size; for instance, if a negative has been taken by the one-eighth objective, doubling it will show all that is seen (being in focus) by that glass with the A eyepiece; trebling its size will show the same as with B eyepiece, and so on; but if the negative has been taken by the one and a-half inch objective, magnifying it six times will not make it show what is to be seen by the two-thirds objective, so that by this process one cannot substitute a lower for a higher objective, but simply compensate for the absence of the different eyepiece in taking the negative. The method consists simply in printing on a collodion film instead of on paper. Moitessier is the only writer on microscopical photography, that I am aware of, who mentions it. The same apparatus is used for printing in this manner as for the preceding process. The microscope being removed, a short focus photographic lens is screwed into its place; the front frame is then fixed at such a distance from the focussing frame as to give a magnifying power of (say) three diameters. Now another piece of apparatus comes into use; this is a wooden frame to carry the negative; it works in a groove

in a block of wood of such a size as to make the central point of the negative coincide with the central point of the lens; the frame for the negative is kept in place by a spring, and the block can be screwed down at any point of the slit before mentioned. The space between the negative and front of the camera should be covered with a focussing cloth, so that no light should enter the lens except through the negative. To prevent the print being reversed, it is necessary to take the impression through the back of the plate. The apparatus being properly arranged, the whole is turned at an angle towards the sky, so as to be clear of trees or other obstructions near the horizon. Direct sunlight is not required, and, indeed, is detrimental to this part of the process, although Moitessier recommends a complicated system of condensers; but these are superfluous when the enlargement required is so small.

Several precautions are necessary in preparing the plate. In the first place, the collodion must not be too thick, for, if so, it has two disadvantages: the whites of the image are sure to have a yellowish tinge, and the film is apt to slip off either in the nitrate bath or during the subsequent operations; so that it is better to add a small quantity of ether (a drachm to an ounce). In the next place, previously to pouring on the collodion, the plate must be rubbed over, by means of a bit of rag, with wax dissolved in ether. Care must be taken not to apply too much, for in that case it forms reticulated markings on the film; nor too little, or else the collodion will not come off the glass in the succeeding parts of the operation. The glass plate must be coated as thickly as possible with the thinned collodion, as it will then come off more easily. Having taken the image of the negative and developed it in the usual manner (I find the gelatino-iron developer answers extremely well for this process), the next step is the toning. This is best accomplished by means of chloride of gold, which gives a good black; platinum is, I think, not quite so good; other substances may be used, but they do not answer so well; uranium gives an ugly reddish-brown colour; bichloride of mercury, with the subsequent addition of very weak solution of hyposulphite of soda (a grain to an ounce of water), gives a good colour, but is excessively troublesome to use, as the mercury makes the film very rotten; so gold, although expensive, is the best. A grain to a drachm of water is poured over the collodion positive until the black colour is seen through the back of the plate when held over a dark material such as velvet. It does not do to hold it up to the light, for then the print may look toned when it is not so. When the above quantity will not tone any longer, some more gold must be added; but the remainder need not be thrown away, as it keeps well, and will do again another time. The effect of this process may be varied according to the subject. If the plate is exposed only just long enough to get an image, so that a prolonged development is required, the resulting print will be of a fine black colour; but if a very long exposure is given, and the development correspondingly shortened, the print is softer, and has the colour of a lead-pencil drawing, which is better for microscopic objects.

The positive having been washed and toned, the next step is to apply to its surface a piece of paper previously coated with a layer of gelatine, about twenty-five grains of gelatine to one ounce of water, to which about five drops of gelatine and a trace of chrome alum have been added. The best way to effect this transference of the film is to lay the plate in a dish of clean water, not necessarily distilled; a piece of the prepared paper is soaked in the water until thoroughly wet, and then applied to the face of the positive beneath the surface; the latter is then lifted out of the water with the paper on it; this prevents all air-bubbles getting between the two, but if any should chance to find an entrance they must be gently pressed out. The plate having been allowed to get dry, is again soaked in water for a few hours, when the paper may be



lifted off with the collodion film attached. Very often the film will come off without previous drying, but it is safer to do so; if it comes off when it is dry, as it sometimes will, we have a print with a highly polished surface, which is, no doubt, very pretty, but not so good in an artistic point of view. If the above directions should be faithfully followed, a print giving all the details of the original negative, and magnified three diameters, will be the result.

I hope, in the preceding remarks, that I have done something towards simplifying the process under consideration—a process which, although, I imagine, not destined to supersede the pencil, yet has such great advantage that it ought to be encouraged. Its advantages may be summed up in one word of great importance to scientific men, who are, or ought to be, searchers after truth: that one word is accuracy; whatever is in focus on the slide will reappear in the negative. On the other hand, its disadvantages are twofold: one, which appears insuperable, is that it only shows objects in one plane; the other is that sunshine is necessary. This in a climate like ours is very serious, but it may be overcome by patience and waiting for a fine day; nevertheless, it is sufficiently provoking to have one's work interrupted by a sudden overloading of the sky. Whoever will invent a steady light of great actinic power, which shall be inexpensive, not requiring quarts of acid, or a small steam-engine, will confer a benefit on the science of anatomy.

#### ART PRINCIPLES FOR PHOTOGRAPHERS.\*

51. We now come to the subject of composition. So far as we have gone, we have learned that what language is to the poet, so are form, light and shade, colour and accessories, to the artist. When we have mastered these elements we are ready to compose according to the requirements of our art. Nature steps in too, now, insisting upon obedience to her laws, with which one must be well acquainted before he can proceed far in the art of composition.

52. Fortunately our work is made easier from the fact that we are not called upon to make pictures continually of actors, wherein we must represent tragedy or comedy; but what we have to do is, to make our productions life-like—i.e., like the living, natural person before our cameras; and we must see that our poses, lighting, &c., harmonize with the character of the subject in hand. We should never lose sight of this law of unity, for on it, more than on any other, depends the pleasing effect of our work.

53. Success in composition requires, first, a careful observance of the rules as already treated in the various elements of art, and then an understanding of the principles of perspective, line, light and shade, variety, repose, simplicity, and harmony. Perspective and line demand the first attention, and it will be well to read the sections treating upon these over again in previous chapters.

54. When making a group, the principal figure should receive the principal light, and the picture should not be crowded any more than the lens in use compels. If the group be a large one, it should be broken up into smaller ones. When a mass of people are crowded together, and no prominence given to any one person, or any number of persons divided from the rest with reference to the effect of gradation, it is then merely grouping, and not composing.

55. Figures should be more or less varied in attitude, too, because exact repetition of lines produces monotony and formality. This variation should be governed by the subject and by the prominence of the figures. If you are making a family group, although the members thereof may wish the baby to be the most prominent figure, the correct way is to give the parents the leading position, and around

them group the rest harmoniously. The principles of nature and the laws of art both frown upon making the figures all equally prominent. Having these things all arranged, we will proceed to the lighting in our next study.

56. The study of light and shade we have referred to already, but we deem it expedient to take it up again here in its application to composition. The management of light and shade in a composition requires great care and study. The adaptation of it to the character of the subject is not only to be considered, but the quality of draperies, accessories, &c., in regard to their power of absorbing or reflecting light; the mechanical arrangement of light and shade that will be produced; and the force and nature of colours that may affect the composition.

57. Whether the picture be a group or have but one principal figure, the arrangement of light should be such as to give prominence to the principal subject, by avoiding the introduction of anything that will draw the attention away from the central figure or figures. If a group is to be photographed, such an arrangement of light must be made as will illuminate the whole, and give prominence to the figures composing the group rather than to background or accessories. As to the nature of materials that compose a group, violent contrasts, such as black and white drapery, should be avoided. The light cannot be arranged to do justice to such extremes, and the harmony of the lighting, as well as the composition, is often destroyed.

58. With a single figure the whole arrangement is more under the control of the artist than with a group, and the various points of the picture can be studied to produce the best possible effect. The nature of the light best adapted for the subject is the first consideration. If light drapery, a much more subdued light will be required than for dark, and the accessories must be arranged so as not to be entirely lost by contrast. The observation in reference to extremes of black and white apply here as well as in groups, and with white drapery anything that absorbs light to any great degree should be avoided.

59. The source and direction of the light must be considered according to the nature of the composition. According to the rules of art, a top-light produces the best effect, by allowing every part of the picture to be more clearly defined. An oblique or side light casts the shadow of one object upon another, and sometimes runs them together in confusion. In portraiture, however, care must be taken with a top-light to avoid heavy shadows on the face. In landscape photography, where the principal points are much separated, an oblique light is very effective in giving force and expression to the composition.

60. Unity of light in a picture is an established rule of art, founded on a law of nature. This rule is not so applicable to groups for portraiture, where we are obliged to light all equally well, as far as possible, as it is to the style of grouping known as *genre composition*. But in pictures of the latter class, as well as those of single portraiture, the principal figure should be placed in the focus of light, while everything else is subordinate to it. This figure then becomes the centre of observation; for the eye is ever attracted by light, and turns instinctively to it. Gradation, so indispensable to harmony, requires the same attention in lighting the different figures of a composition, so that a perfect blending, from the principal figure, in the strongest light, to that of the least importance, in the deepest shadow, may be secured, as in lighting a single face, where a harmonious gradation from the highest light to the deepest shadow is now so universally sought for and obtained. It will be readily seen, that under the proper regulation of laws, light is to the artist a language or medium of expression, the due observance of which enables him to make clear the plan of his picture, and give the interpretation he desires.

61. Objects receiving light should not be extended to the margin, because, in the first place, the lights cannot be

\* Continued from page 155.



well supported by the shades. In the next, extending the lights quite to the boundary gives the effect of an unfinished picture, which destroys the unity so essential to the harmony and completeness of the subject.

62. The lights as well as the figures should vary in form. This depends much upon the management of the drapery. In the infinitely various modes of arranging draperies, the artist may contract or extend his lights at pleasure, varying the general effect to any extent.

63. If the light and shade in a picture are well arranged and in due quantity, the effect will be pleasing, even at such distance from the eye that the subject cannot be distinguished. It is then a mere correspondence, or a balancing of light and shade. On a nearer approach, its force and powerful relief attract the eye, and fix the attention of the spectator. It will not have this effect unless it possesses the essential requisites of *chiaro-oscuro*.

64. We have considered the subject of lighting in connection with composition; we now propose to call the attention of the student to the opposite, or shadow effects, and make some suggestions in reference to the part they perform.

65. Shadows are natural attendants of light, and the student of nature will observe how one always balances the other. This is in accordance with the law of compensation that follows in everything throughout the universe, and it is only by a careful study of nature that we learn to distinguish the causes that influence us in viewing a scene, to pronounce it grand or insipid.

66. In reproducing what we see in nature by what is termed art, extensive shades contribute greatly to the beautiful as well as the grand and majestic result of the whole together; they equally serve to give richness and grace to the middle tints, and brilliancy, beauty, and animation to the masses of light. They also afford a repose no less grateful and necessary to prevent the fatigue and over-exertion of the sight on the illuminated parts. To this end, all the obscure or dark parts should be so arranged as to form one general mass, and its greatest force collected into some one part where it will have the best effect, and become a principle on which all the others are in a graduated and harmonious dependence.

67. The photographic art student will readily understand the application of these suggestions to his daily practice. Whether it be a head, a three-quarter length, or a full figure, the application remains the same. The test of skill, however, is with the first of these, for it is only in that perfect blending of shadow with light, rounding up to the highest part, where the pure light is but a mere point, and falling off through the delicate gradations of tints into the deepest shadow, that a head can claim to be artistic in composition of light and shade.

(To be continued.)

## HINTS UNDER THE SKYLIGHT.

[BY R. J. CHUTE.\*

### THE EYES.

THE most important feature of the face is the eyes. In them are expressed life, love, joy, animation, goodness, and all that makes the human face attractive, and often bewitching. They also express the opposites of these, and may become equally repulsive. They are the windows of the soul. To them we always look when we would read the workings of the mind. To them the artist looks when he would measure the qualities of his sitter, and decide upon the light, attitude, and representation of character to be given him.

Among photographers the eye receives a variety of treatment. Mr. Southworth, at the convention at Buffalo, explained his method or rule of lighting the sitter to be that of screening the light till it became easy to the eyes. Mr.

Frank Jewell, in *Mosaics*, also regulates the light according to the eye, but has a little different method. He regulates the position of his sitter and the light till the "catch-light," or little white spot in the eye, appears in both; this, he claims, gives a proper light for the face. The rule is an excellent one, and may be followed with full confidence in its success, for the formation of the eye is usually determined by the character of the face. Others work from the eyes by various methods, while some pay no particular regard to them, but work more by a general study of the whole features. The eyes, however, cannot be treated with too much care, as the success of a picture very materially depends upon the clearness, depth, and life given to them. And here I may remark that this is a matter almost wholly under the control of the artist.

Dark eyes are, perhaps, subject to the greatest abuse, and are often robbed of their life and brilliancy by reflections from surrounding objects, to which they are so susceptible. These reflections are sometimes from the carpet, from light screens, or from the walls of the studio. They are often very perplexing, and the best method is to exorcise all permanent tints that produce these effects, and be careful to move out of the way any offending screens. The old notion of blue walls and blue screens was a productive source of evil in this direction, and all the more so because it was deceptive. The blue reflection in the eye could not readily be seen, and yet it photographed white. From these causes have doubtless arisen the great difficulty in photographing light eyes. The reflections in them are not as readily perceived even as in dark eyes, hence they have been, in days gone by, so literally and so generally extinguished that the public had come to think that people with light eyes could never get a good picture. But the introduction of neutral tints, and the exclusion of everything that will reflect actinic light, has proved that light eyes may be photographed in all their fulness and beauty as well as dark ones.

In order to secure a natural expression of the eyes, they must be perfectly easy. A glare of light that causes discomfort should be avoided; the eyes should rest on some object that can be easily and distinctly seen, for there is nothing more trying than an effort to look at an object that is either too small, too near, or too far away to accommodate their natural focus. The artist who is observing, even if he does not understand, the construction and anatomy of the eye, will soon learn to judge from the form of the eyes about where to place the rest. In near-sighted persons they are generally round and full, like a short-focussed lens, while a long-sighted person will have eyes with the balls more flattened; but it is always well to consult the comfort of the sitter in this respect; he then feels that you are mindful of the conditions that insure success, and that you will not overlook even the smallest item that may have a bearing upon the result.

One of the evils in this connection has been the impression among sitters—arising, no doubt, from instructions they have received from time to time when before the camera—that the eyes are to be fixed upon one point, and not changed on any condition, nor even winked. Is it a wonder that we see cross-eyed and strain-eyed looking pictures? If an object be given the sitter to look at, it should not be less than three inches in diameter, nor more than six. A cabinet card is a good size; and he should be particularly told that he has the privilege of examining it all over: let the eyes wander from one point to another with perfect freedom, and winking them naturally. A full and free expression of the eye is secured by those who can see at a distance by letting them look as far away as possible; give them no particular point to fix the eye, but let it wander freely into the farthest and darkest corner of the studio. The height of the eye should also be considered, and the rest raised or lowered so as to have the direction of the sight correspond with the position of the head.

(To be continued.)

\* Philadelphia Photographer.

# The Photographic News.

Vol. XVIII. No. 814.—APRIL 10, 1874.

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## INTERNATIONAL EXHIBITION OF PHOTOGRAPHS IN HOLLAND.

OUR photographic friends in Holland have conceived the happy idea of opening an exhibition of photographs in Amsterdam, in September next, to which they invite photographers of all nations to contribute. It will open on the 14th of September, and remain open until the end of October, applications for space to be made before the 15th of July. Mr. H. L. T. Haakman, an old correspondent of the *Photographic News*, who is president of the commission, writes to us to aid in securing contributions from this country, and we have much pleasure both in giving the matter publicity and recommendation. Our correspondent says:—

"DEAR SIR,—By to-day's post I had the pleasure of forwarding you a prospectus of invitation to the International Photographic Exhibition.

"A couple of years ago we formed here a photographic society, and published a monthly journal. I am vice-president to the society, and president to the acting committee of the journal. The Exhibition will take place in the rooms of the Artists Painters' Association, and, as you will notice, with their co-operation, in so far that they will form part of the jury for admittance and rewards. This is quite a new feature, and we hope that it may lead to much good. Instead of our painters being antagonistic to photography, they honestly confess that the new art not only contributes much to the education of the public mind, but they admit that drawing and perspective have made rapid strides since the new art has been more generally applied; and several amongst the best of them regularly make use of photography in the composition of their paintings.

"We therefore trust that though the intrinsic value of the rewards we are about to offer be *nihil*—our means being too limited for gold or silver medals—the reward may still be appreciated, as it will be granted by neutral artists chiefly, if not exclusively, on the plea of artistic merit.

"Under these circumstances, I take the liberty, in the name of the two committees, of asking your valuable co-operation as a promoter through your kind assistance.—Very truly yours,

H. L. T. HAAKMAN.

"Amsterdam, 30th March, 1874."

We will publish the rules and regulations next week, and in the meantime commend the matter to our readers.

## THE PHOTOGRAPHIC SOCIETY.

THE following circular, containing the correspondence between the council of the Photographic Society and Mr. Howard, who has discharged the duties of acting secretary during the interval since the resignation of the officers at the annual meeting in February, has been forwarded to

each member of the society. Doubts on various grounds having been raised as to the legality of some of the proceedings which inevitably followed the resignation, it will be seen that the course now taken will meet any difficulty on that score, and the harmonious co-operation of all parties will, we trust, be secured in the steps yet to be taken. It is probable that the same gentlemen, with some additions, will be elected on the revising committee. The circular runs as follows:—

9, Conduit Street, W.

SIR,—I am instructed by the council to inform you that, at the adjourned annual general meeting of the society held on the 10th instant, a resolution, moved by Mr. G. Hooper, and seconded by Dr. Mann, was passed to the effect "that the president, vice-presidents, treasurer, council, and secretary be requested to resume office for the remainder of the present session, and that at the next annual meeting all officers of the society be elected in accordance with the new laws about to be framed." This motion was communicated by the acting secretary to the late officers, and they accordingly met and gave the matter their serious consideration. Feeling that a refusal to comply with the terms of this motion might be seriously prejudicial to the welfare of the society, it was resolved that the following letter be forwarded to the acting secretary in reply to his note:—

Royal Arsenal, Woolwich, 17th March, 1874.

SIR,—In reply to your letter mentioning the request passed at the adjourned annual general meeting of the Photographic Society, that the late president, vice-presidents, treasurer, secretary, and members of council should withdraw their resignations, I beg to inform you that they consent to resume office as the council of the society until a new code of laws is in force, or until the next annual general meeting, and will then resign their offices into the hands of the members at large.—We are, &c.,

JAMES GLAISHER,  
H. BADEN PRITCHARD.

Mr. Frank Howard, Acting Secretary.

To this communication the following reply was received:—

Photographic Society.

10, Lansdowne Road South, South Lambeth, March 20, 1874.

SIR,—On behalf of the late acting council of the society, I have to acknowledge the receipt of your letter signed

JAMES GLAISHER,  
H. BADEN PRITCHARD,

announcing the resumption of office by yourself and colleagues.

I have at the same time to inform you that I have forwarded to you the minute-book, letters, and other property of the society which came into my possession during the last four weeks.

I have also to inform you that, with the consent of the mover of the adjournment (Mr. Davis) and the chairman of the meeting, notice of the postponement of the adjourned meeting for Tuesday next will be sent to members of the society.—Yours faithfully,

H. B. Pritchard, Esq.

F. HOWARD.

The next ordinary general meeting of the society will be held on Tuesday, the 11th April, at 8 p.m., at 9, Conduit Street, Regent Street, when a paper will be read by Mr. George Bruce, of Dunse, "On Printing and Toning," and a committee appointed to revise the laws. The report of the proceedings at the adjourned annual general meeting held on the 10th instant will be printed in the April number of the Journal.—I am, sir, your obedient servant,

H. BADEN PRITCHARD, Hon. Secretary.

9, Conduit Street, Regent Street, W., March 25, 1874.

## VISITS TO NOTEWORTHY STUDIOS.

M. NADAR'S STUDIO IN PARIS.

THE second Parisian studio to which M. Lacan introduces us, in continuing his letters to our Philadelphia contemporary, is that of M. Nadar, equally distinguished as aeronaut and photographer. Nadar, whose real name is Felix Tournachon, is a type of artist not quite uncommon in France, but of which, in this country, we have no examples. He is nothing, if not bold, startling, effective, even theatrical. His work is generally good; but if not of the highest quality, it is never common-place. Visitors to Paris are familiar with his name in large red letters, written diagonally across the side of a house, and written in precisely similar fashion at the back of his mounting cards. When he first adopted photography as a business, in 1852, he was a familiar character in Paris. M. Lacan says:—"He knew everybody, and everybody knew him, for he had been successively a student of medicine, a designer, a journalist, and he had made innumerable friends among the different



classes of persons who had been his companions in work or pleasure. In 1852 he rented a small house with a garden attached, situate No. 113, St. Lazare Street (a cabalistic number), and he had painted on the wall, in gigantic letters, his strange fictitious name. He made there the portraits of every one who had any celebrity. His prints, which were large for that time, presented an entirely novel appearance. Nadar worked generally in full sunlight, or, at least, by lighting the subject in such a way that one side of the face was very light and the other very dark. This resembled very much what is now called the Rembrandt portrait. These artistic pictures had a great success, and soon the new photographer felt the need of enlarging his establishment. He opened a studio on the Boulevard des Capucines, near the Madeleine. He had there, in the second storey, a glass-room and ateliers which differed only from those of his co-workers by their larger dimensions and their style of ornamentation. Everything on the inside and outside was painted red. From the vestibule, which opened on the Boulevard to all the passers-by (and in which were exposed numerous specimens), up to the iron work of the glass roof, everything presented to the eye this glaring colour. Nadar himself appeared to his visitors wearing a long woollen jacket, which, together with his great height, his red hair, his curled mustache, and his pale complexion, gave him the appearance of a stage devil, as represented at the theatre in certain fantastic pieces. The prints he made were bordered with red lines. His signature and the address were printed in red. It was, in fact, a veritable carnival of red. As the Empire was then in existence, and as Nadar was known to be a Republican, it was said to be a striking manifestation of his political opinions."

After reference to his experiments in ballooning, and the accidents which nearly cost the artist his life and that of his wife, the present studio of the eccentric artist is described. It is in the Rue Anjon St. Honore, in the most opulent and elegant quarter, a house which he has converted into a little artistic palace. "Here pink has taken the place of the red in the general decoration, and the master of the house has substituted the white cashmere jacket for the scarlet one. The house opens by a large vestibule, entered through a glass folding door. This vestibule is covered with frames, in which are exposed various specimens. On the left is a large reception-room, adorned with very fine paintings, representing the different phases of the ascension of his balloon the Giant. Works of art and high-priced porcelains (Nadar is one of our principal collectors in this line) attract the attention of the visitor. On the right of the vestibule is the sales-room, at the back of which, through curtains made of old tapestry, always open, is seen the principal room, which alone takes up the half of the ground floor. This large apartment, which resembles an art exhibition-room, is lighted from the top; a kind of gallery, formed by the slender columns that support the ceiling, surrounds it on three sides. It is there that the customers are received, and await, without impatience, the time for sitting, having to entertain the eyes and the mind exquisite paintings, curious albums, rare flowers, and works of art of all kinds."

An artist of reputation, M. Vienseuf, is at work painting the enlarged portraits in this gallery. His half-length portraits cost from one to two thousand francs, and his full-length from three to four thousand; but Nadar's customers do not object to these high prices, for they are genuine master-pieces.

"In the first storey is the main operating-room, which is upwards of fifteen yards long by thirteen wide, and about four yards in average height. The skylight, which is straight, and not inclined, as is generally the case, is hung with three rows of curtains (made of muslin and cretonne, both of a greyish tint), which move in all directions. A small moveable chamber, which is also furnished with a double row of curtains, and which can be

moved in any direction, allows the operator, according to the season, the hour, and type of the sitters, to light them under all their aspects, and at all angles, from a front light to the divers glancing lights of that known by the name of "the illumination of the foot-lights." Large backgrounds, painted by some of the best scene painters of Paris, represent, in the most natural manner, a great variety of subjects. This immense terrace can be lighted, as desired, from the north, the east, or the west.

"Nadar takes upon himself the task of removing from the water every morning the prints immersed the preceding night, and he examines each with great care, rejecting all those that seem to him imperfect. The drying is done by means of blotting-paper.

"Success has crowned his efforts, and the public hold him in high favour. It must be admitted, however, that he has neglected nothing to maintain this position. He has anticipated all improvements, and his prints have a peculiar character which renders them eminently artistic. Boldly lighted, they present startling effects, together with an exquisite purity of outside and a transparency of tone which render them most charming to the eye. They are especially remarkable for a harmony which is particularly striking in the portraits of women dressed in white. The entire gradation of whites, so difficult to obtain in photography, is represented along-side of the deepest blacks. The kind of portraits most generally made by Nadar is the album card bust, enamelled or plain, and the enlargements. All the cards made at this establishment have the date photographed in the ornamental designs which surround the picture. It is a very good idea, and is rendered more complete by the reproduction of the autographic signature when it is the portrait of a well-known person. I would mention that Nadar is the first in France who applied the electric light to photography. His experiments, at the time he made them (about 1860), attracted a great deal of attention. It was by means of this light that he was enabled to reproduce, in a numerous series of views of a highly fantastic character, the interior of the catacombs and of the sewers of Paris. He has used, also with success, the magnesium light for the same purpose."

## PHOTOGRAPHY IN NATURAL COLOURS.

BY M. DE ST. FLORENT.\*

*Exposure.*—The paper, after having sojourned in the bath for five to ten minutes, is dried between blotting-paper, and then placed behind a painting upon glass.

If the operation is conducted in full sunlight, the thickness of the glass will have but little influence upon the clearness of the picture, because of the great rapidity of the printing; but if, on the other hand, diffused light is employed for printing, the result will be a very blurred one. In the latter case it is necessary to lay the paper next the painting itself, interposing between the two surfaces a sheet of mica, or any other substance of a thin and transparent nature.

The following plan may be adopted:—Round the margin of the painting itself are cemented strips of thick paper about one centimetre in breadth; the prepared paper is then applied in a damp state upon a glass plate, and sponged after such operation. The latter is placed against the painting with this paper frame to protect it, the slight distance between the two serving to prevent the painting from becoming damaged, while, at the same time, it is not sufficient to yield a blurred image.

The printing frame having been exposed to the light, the paper is seen to bleach rapidly, and the operation may be considered finished when the high lights of the image have become perfectly white. The print is then removed from the frame—a longer exposure jeopardising the impression altogether.

\* Continued from page 125.

The image is now plunged into water or alcohol, which removes the excess of sublimate. In this state it is capable of withstanding the action of diffused light for some minutes, and may be preserved for a long time in an album.

*Theory of the Formation of the Image.*—We will now proceed to examine the reactions which take place in the operations which we have just described.

On its exit from the mercury bath the sheet is impregnated with mercurial chloride, which is reduced by the light, giving rise to chloride of mercury and free chlorine. The latter combines with the subchloride of silver, which is transformed into white chloride. At the same time, the sub-chloride not acted upon assumes a peculiar physical condition, which permits of its being impressed by various coloured rays.

The excess of mercurial chloride having been eliminated by washing, the image is composed of chloride of silver and subchloride in a certain physical condition, and of mercurial chloride.

The calomel may be transformed into sublimate, either by the aid of chlorised water, or by means of *aqua regia*; it may then be removed by repeated washing.

The image is formed of chloride of silver and subchloride of the same metal: we shall see presently how it may be possible to preserve these compositions from all ulterior change.

If we allow a film of sub-chloride, sensitized with nitrate of mercury, to bleach completely in the daylight, and we immerse it afterwards in nitrate of silver, which is allowed to blacken in daylight, it becomes susceptible once more (after having been passed again into the mercurial bath) of reproducing coloured images.

*Employment of Alkaline Iodides.*—It is known to be possible to obtain photographic positive prints direct, by means of certain processes, the simplest of which is that of M. Lassaigne, which consists in immersing a blackened paper in a dilute solution of iodide of potassium, and to expose it afterwards to the light. This method may be applied equally for the production of heliochromic images.

For this purpose it suffices to plunge a paper coated with sub-chloride of silver for some minutes in a five-per cent. solution of iodide, after having been freed, in the first instance, by washing, from the excess of hydrochloric acid which it contains.

It is exposed to the light as above, and we obtain with a sufficient exposure an impression in which the whites are formed of iodide of silver; that blackens very slowly under the action of the light, even when the excess of alkaline iodide is removed, so as to prevent any ulterior action upon the sub-chloride forming the coloured portions of the image.

*Employment of Peroxygenic Acids.*—It is known that certain peroxygenic acids—such, for instance, as chromic acid—are reduced under the influence of the solar rays. The heliochromic process of M. Poitevin is founded upon the reduction of a mixture of bichromate of potash and sulphate of copper. We have been able lately to determine that the analogous properties of nitric and sulphuric acids are also applicable to heliochromy.

*Nitric Acids.*—By immersing into pure concentrated nitric acid a sheet of paper coated with sub-chloride of silver for the space of ten minutes, and then exposing it to light behind a painting upon glass, we obtain in a few minutes in the sunshine an image with very bright colours, the ground of which is a little yellow by reason of the action of the acid upon the organic matter. The impressions are very fine, and present passable stability if the Sutton paper previously referred to is employed. If the sub-chloride paper contains an excess of hydrochloric acid, there is ground for believing that the oxygen set free combines with the hydrogen, and forms water. The chlorine in a nascent condition then transforms the sub-chloride into chloride of silver, and the definite reaction is analogous

to that which took place with the mercurial chloride. If, on the contrary the sub-chloride employed is perfectly neutral, there is probably produced nitrate and nitrite of silver, and also a little chloride of the same metal.

*Sulphuric Acid.*—The employment of sulphuric acid diluted with a small quantity of water gives analogous results, especially upon ordinary paper. There is then formed in the whites sulphate of silver and a little chloride. We are about to undertake some experiments by the aid of compounds of the chlorine series, and we hope to encounter some accelerating agents.

*Action of Extra-Prismatic Rays.*—If we examine attentively the image obtained by one of the above-mentioned processes, we remark that all the colours appear mixed with red and violet. This result should be attributed, as M. Becquerel has observed, in his great work upon light, to the action of infra-red and ultra-violet rays. The action of these may be weakened by placing before the frame, or before the lens, according to circumstances, a vessel containing a solution of bisulphate of quinine, a substance which possesses the property of absorbing them almost entirely. As to the infra-red rays, they may be absorbed by a weak solution of sulphate of copper; a mixture of these two products will give good results.

*Impression of the Prismatic Image.*—We have not till now tried to secure an impression of the prismatic image by the aid of the processes above described. It is probable, however, that the thing would not present any great difficulty. It would be possible, even with our present very imperfect manner of fixing, to render some service to the new science known under the name of spectral analysis. We know, in fact, that in certain metals the lines of the spectrum are so numerous that it is difficult to pronounce a sound reason for the cause. Images of a fine character, obtained upon albumen, and capable of being preserved for some time, would serve to allow the spectra of the different metals to be compared at leisure. We have not yet examined the action of different sources of artificial light upon sub-chloride of silver; but it is to be presumed that they are susceptible of giving images quite as well as solar radiations.

*Addition of Chromic Acid to the Mercury Bath.*—There seems to be some advantage in adding to the nitrate of mercury bath a small quantity of bichromate of potash and sulphuric acid; the colours obtained by means of a bath thus modified appear to be more vivid.

(To be continued.)

## WHIEY DRY PLATES.

BY A. DE POVORSKY-JORANKO.\*

In the photographic journals, as also in the handbooks relating to the art, there are many prescriptions for preserving the sensitiveness of dry collodion plates, or for prolonging the period of sensitiveness of wet ones. A great many substances have been poured over the surface of the collodionized plate with this object, giving more or less satisfactory results; but the incessant variety of the experiments conducted prove that the object of the experimenters has only partially been realised, and that there remains yet something to be accomplished.

You were good enough to notice in your journal my paper upon sensitized dry paper in 1869, and in that communication I mentioned whey as a preservative of the photographic film, and I had the honour to forward you some specimens which you were good enough to accept. To-day I again come before you with my whey, but this time bring it forward as a preservative of sensitized dry plates, for which purpose it seems to answer excellently well. I will describe my method of working, and enclose you some prints produced by the same, so that you may decide whether or no my process is worth publishing.

My method is of the simplest, and the results without a

\* *Moniteur de la Photographie.*



fault. It is adapted to every kind of collodion suitable for dry plates, and it gives magnificent results with bromized collodion such as that of Sutton. The harmony of tone in pure bromized collodion leaves nothing to be desired, and since I read of the Sutton process in the *Moniteur de la Photographie* I employ it for wet plates.

The glass plates are cleaned, coated, and sensitized in the ordinary way; only, if the collodion employed is bromo-iodized, it should not be freshly prepared, and should be such as will give good wet plate negatives. To clean my plates I employ Carey Lea's method—that is to say, I wash them for half an hour in a solution of sixty grammes of bichromate of potash mixed with sixty cubic centimetres of common sulphuric acid and one thousand of water. This solution effectually cleans the glass. After having well rinsed the surface of the plates on their exit from the bath in clean water, they have merely to be wiped with a clean rag impregnated with a little old collodion. If one works with bromo-iodized collodion, two or three minutes' immersion in a silver bath of eight per cent. strength is sufficient. If, on the other hand, a simple bromized collodion is used (three per cent. of bromide of cadmium) an immersion of ten minutes in a silver bath of eighteen to twenty per cent. strength is indispensable. We prefer the simple bromized collodion, on account of its rapidity and excellent results.

After having been sensitized, the plate is plunged into a bath filled with rain-water to which has been added one per cent. of acetic acid. The plate should remain at least four minutes herein, after which it is put under a rose and energetically washed for two or three minutes. The water employed may, if charged with carbonate, be acidulated until slightly acid to the taste. After washing, the plate is drained, and covered with a preservative made up as I am about to describe.

One hundred cubic centimetres of skimmed milk are taken, and to it are added one hundred grammes of rain water, and the mixture is then put on the fire. As soon as it commences to boil, one or two grammes of acetic acid, together with one gramme of citric acid, are added, which will soon turn the milk. Having separated the caseine by filtration, there is put into the liquid the white of an egg; the liquid is shaken for some moments, and then put upon the fire again and boiled five or six times consecutively, after which the whey—thus clarified and filtered—is put into a clean bottle with a few grains of camphor, and may be kept fresh, in a cool place, for perhaps two or three weeks. At the same time the preparation is such an inexpensive one that it is no serious matter if it has to be prepared fresh for every operation.

Of this whey one hundred grammes are taken, and to it 0.25 grammes of pyrogallie acid added, and the preservative is then ready for use. A small portion of it is poured upon the drained plate to chase away the water; this is thrown away, and the plate again covered with some more, sufficient to envelop the whole surface, care being taken that the preservative covers the collodion throughout.

The preservative is allowed to remain upon the plates for about a minute, and then the latter is put under a rose and again washed energetically, this operation being inherent to success. Afterwards there remains but to dry the plate in a dark place and one free from dust. In an hour the plate is perfectly dry, and will retain its sensitiveness for three months; beyond that time I have not pushed my experiments.

I must here refer to a very interesting matter. It sometimes happens that markings and lines appear on the plate after desiccation; on the development, these disappear. An observation made by M. Mosley in 1863 coincides with this experience of mine, although I am unable to give any explanation of the matter.

As regards exposure and development, the former depends, of course, upon the illumination of the object, and cannot be vigorously defined. At the same time I may

mention that the largest exposure for landscapes in the dark days of autumn and winter, with a triplet (half-plate) lens of Dallmeyer, ought not to exceed thirty seconds. I obtain vigorous and harmonious negatives after a development of four or five minutes. For interiors, everything of course depends upon the light, and the exposure may last either several minutes or several hours. The method of development is alkaline combined with intensifying in the ordinary manner with pyrogallie acid, acetic, or citric acid and nitrate of silver. I employ the undermentioned formulæ:—

No. 1.—Distilled water	...	100 grammes
Pyrogallie acid	...	0.25 "
No. 2.—Distilled water	...	100 "
Bromide of potassium	...	2 "
No. 3.—Liquid ammonia	...	100 "
Distilled water	...	100 "

To develop, I take twenty-five grammes of solution No. 1, and add one gramme of No. 2; and, having put the plate under the rose to moisten it well, I treat the film two or three times with this solution, after which I add eight or ten drops of solution No. 3. I cover the plate with this mixture, and allow it to remain upon the film for thirty or forty seconds, pouring back into the developing cup and throwing it again over the plate. The image appears on the first application of the ammonia liquid, and grows more and more vigorous. As soon as the development becomes tardy, a few more drops of the solution No. 3 are added, and the operation is thus proceeded with until all the details of the image have appeared, when I stop, and wash the negative, and fix it with a fifteen or twenty per cent. solution of hyposulphite of soda. The fixing should render the image transparent, and remove the least trace of bromide of silver. Afterwards the negative is thoroughly washed, and I proceed to intensify in diffuse daylight. A solution is made of:—

Water	...	100 grammes
Pyrogallie acid	...	0.25 "
Citric acid	...	0.25 "

Thirty grammes of this solution are mixed with eight or ten drops of a six per cent. solution of nitrate of silver, and this mixture is poured on and off the plate, allowing it to remain thirty to forty seconds. The intensifying goes on rapidly, and one need not hurry it too much, therefore. When the proper amount of vigour has been secured, the plate is washed. A little more hyposulphite solution is poured over the film, and the latter again thoroughly washed, and placed upright upon filter paper to dry. I may add, that the collodion covered with the whey preservative withstands perfectly well all this washing, and the film, when dry, is uniform and brilliant, and is only with difficulty scratched with the nail. This may appear incredible, but the first plate will prove the veracity of my statement.

Finally, I may remark that not a plate has failed me in this method, and I feel sure that any mediocre operator working it with a little care will rarely be unsuccessful. One should never hasten the development of the plates. The more slow it is, the more satisfactory will be the result, for you can then control the image better, and correct any mistake that may have arisen from too long or too slow an exposure. The ammonia should only be introduced with great foresight and caution. After two or three plates, one becomes perfectly competent to watch and control the progress of the development, the alkaline method having a great advantage in this respect over the process ordinarily adopted by photographers.

### Correspondence.

#### IMPEDIMENTA OF THE MAGIC LANTERN.

SIR,—Kindly allow me a word or two in reply to Mr. James Martin, who, in an article in last week's number of the *Photographic News*, says, in reference to the writer of an article in



a contemporary. "Had the writer been as good a mechanic as he was ingenious, his article had never been written." And by way of a beginning I would slightly alter and extend the quotation, and say of Mr. Martin, had he been anything at all approaching a mechanic, or had he *tried* the proposed gas-bag that he recommends to his readers, his article would never have been written. Not only does Mr. Martin show a want of mechanical knowledge, but, what is worse, he betrays a sad want of experience of the subject on which he writes. An experienced lantern operator would never say, in reference to weights for the gas-bags, "I have always found that they could be borrowed from any tradesman dealing in heavy articles." Of course he would know that weights might be borrowed, but what kind of weights? In all probability the large, round-shaped variety, slightly tapering to one end, and which can only be induced to lie on the sharply inclined boards by wedges of a pocket-knife and a bunch of keys, and sundry other gentlemen's companions, the whole structure being about as secure as a child's cardboard castle, and, in consequence, keeping the operator in a state of mental uneasiness far from conducive to a successful exhibition. The experience of a quarter of a century tells me that the right thing is to get the required weight cast in the form of two or four bars, the length of the breadth of the boards, and to take them with you wherever you go. If the operator finds them troublesome in the bottom of a cab or railway carriage, he had better stay at home, and let another take his place.

My object in writing, however, is not to controvert Mr. Martin's notions on weights—operators may be safely left to discover the right thing for themselves. My object is to guard your readers against being misled by his proposal to make square bags of the folding camera or accordion type, which could only end in the discovery that they had thrown away their money and lost their valuable time in making a thing that was utterly unfit for the purpose intended; and this I can probably best do by describing the trial and failure of one of my friends here, whom I shall call Mr. A.

Mr. A., then, is recognized on all hands as at once the most ingenious and thoroughly practical mechanic in Scotland, and that is saying a good deal. In our own clique, whenever a difficulty occurs, it is, "Send for Mr. A.," or if one is expected, it is, "Never mind, Mr. A. will be there, and will make it all right;" in fact, his mechanical ingenuity is equal to anything—from picking the lock of a camera case to devising suitable appliances for photographing the transit of Venus. Well, some two years ago he intimated his intention to improve on the usual convenient wedge-shaped gas-bag, and if it had not been two years too early, his proposition might have been said to be a literal copy of Mr. Martin's proposal; and, being thoroughly practical, as well as mechanical, he at once proceeded to carry his idea into practice. Some of his workmen are experienced camera makers, and the result of their labour was two beautiful bags, patent cocks, polished boards, and rubber sides that folded and fitted admirably. By and by an exhibition was arranged for, and the bags were sent to me to be filled. The tube from the gasometer was attached, and so far all went well; soon the upper board began to rise, and simultaneously an uncomfortable cogliness or toppling-over tendency showed itself. This might have been remedied by upright stays; but a greater evil soon became apparent: the bellows arrangement, in short, was a failure. Although the pressure on the gasometer was not more than four inches of water, long before the bag was full the four sides suddenly sprung out in one bulge, letting the wooden top sink down, and showing unmistakably that the thing would not do. Of course Mr. A. did not at once give up his plan; many schemes were tried, but at last the rubber was stripped off and handed over to the worker in that material, who converted it into a pair of useful wedge-shaped bags, that have been in use ever since.

**MORAL.**—Do not try to work out Mr. Martin's proposal till he is able to report its success; and when he does, ask *cui bono*? You would still have four boards to carry, and even if they were empty they could not be carried so conveniently as a pair of ordinary pressure boards, while if full the inconvenience would be much increased.

I am very anxious for some improvement on the ordinary means of supplying gas for the oxyhydrogen light, but am quite certain that we have experimental evidence that it will not be in the direction indicated by Mr. Martin.—Yours respectfully,

JOHN NICOL, Ph.D.

**SIR,**—Since reading the article by Mr. James Martin in the PHOTOGRAPHIC NEWS of the 2nd inst., on the unwieldy apparatus required for the exhibiting of the magic lantern by the aid of the lime light, an idea has occurred to me, that water might be used

to give the necessary pressure to the gas bags. India-rubber bags might easily be made, which, when empty, would occupy a very small space; but when filled with water, would answer the purpose of weights. Or, instead of bags, zinc tanks might be employed, of such a size as to be utilized for the conveyance of the slides, and filled with water during the exhibition.

Having occasion last year to show my own dissolving view apparatus, I found considerable inconvenience from not having proper weights with me, and was obliged to use large stones, which twice during the entertainment rolled off the bags, to the annoyance of myself and the consternation of the audience.

I have not the faintest idea as to whether water bags could practically be used, but offer the suggestion simply for what it is worth.—Yours obediently,

OXYGEN.

#### ACETATE OF LEAD FOR ELIMINATING HYPOSULPHITES.

**DEAR SIR,**—I am glad to see that the elimination of hyposulphite from prints is being discussed in your pages; the subject is an important one, and I feel much interest in it.

When Mr. Newton first proposed the use of acetate or nitrate of lead to effect the removal of hypo from prints, he asserted, if I am not mistaken, that the decomposition of the hypo resulted in the formation of sulphate of lead. I am more than inclined to doubt the accuracy of this assertion, for I find in the late Professor Miller's Chemistry the following statement:—"Solutions of the hyposulphites give a white precipitate of plumbic hyposulphite in solutions of the salts of lead." If this be the case it would surely only make matters worse to treat prints containing hypo with any lead salt, for by so doing we should be merely replacing a soluble hyposulphite by one which is insoluble or only sparingly soluble. Is not this a clear case of out of the frying-pan into the fire?—i.e., if the above view be correct. But even supposing that sulphate of lead be formed by the lead treatment, as Mr. Newton asserts, I think the advantage gained is a doubtful one. This salt is insoluble in water, and so must remain in the print; it is also decomposed by sulphuretted hydrogen, which is frequently present in the atmosphere of towns, sulphide of lead being formed. This would certainly cause some discolouration of the photograph. I am inclined to think that Dr. Vogel's method with iodine is also of doubtful value. The hypo is converted by iodine into tetrathionate of soda, which being only another, and probably more unstable, compound of sulphur, would require as careful removal from the prints as the original hypo.

I hear very little about chloride of lime as a means of eliminating hypo from prints. It does not seem to have attracted much attention, though I believe it to be far less open to objection than either iodine or acetate of lead, no compound being formed by its means which is injurious to the prints. It is said to weaken the prints. Why should it do so? I have never tried it myself, so I cannot say whether it seriously affects them.—Yours truly,

Warrington, March 31st, 1874.

F. W. REYNOLDS.

#### Proceedings of Societies.

##### LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

The usual monthly meeting of this Association was held at the Free Library, William Brown Street, on Tuesday evening, the 31st ult., the Rev. J. D. RILEY, vice-president, in the chair.

The minutes of the previous meeting were read and passed.

Mr. GILBERT DEAR and Mr. W. H. KIRKBY were elected members of the Association.

Mr. J. H. T. ELLERBECK exhibited a Howard's portable tent, which he intended to use for changing and developing dry plates.

Mr. LEWIS HUGHES handed round a small nugget of silver, which he had obtained by fusing his waste silverpaper with bicarbonate of soda and borax on a smithy fire.

Mr. O. R. GREEN showed forty 11 by 14 views of the wildest and most beautiful scenery of the United States, consisting mostly of views of the district of Colorado, Rocky Mountains, &c., taken by Mr. Jackson, the photographer to the United States Government Survey Expedition, under Professor Hayden. Mr. Green, in describing the views, detailed the difficulties under which the photographer in those districts laboured. Not only had everything to be carried on horseback, but many miles had to be traversed, and sometimes heights of 3,000 feet to be scaled before a suitable standpoint could be obtained.

Mr. FORREST and Mr. KEITH both spoke of the exquisite character of the views, and of the remarkable success of Mr.



Jackson in obtaining such excellent pictures under such difficult circumstances.

Mr. W. ATKINS then explained the construction of the Woodbury sciopticon, and afterwards exhibited by its aid a number of transparencies taken by the members.

The meeting was shortly afterwards adjourned.

#### EDINBURGH PHOTOGRAPHIC SOCIETY.

An ordinary meeting of this society was held in the Hall, 5, St. Andrew's Square, on Wednesday evening, the 1st instant, Mr. R. G. MUIR, president, in the chair.

The minutes of previous meeting were read and approved, and the following gentlemen were admitted ordinary members:—Dr. Dickson, Messrs. A. Henderson, A. Fullerton, W. H. Moss, J. R. Wright, R. Dryburgh, J. Dryburgh, R. Simpson, J. Simpson, J. C. Pottage, and Rev. H. M. Robertson.

Mr. R. H. Bow then read a paper entitled "First Notes of Some Experiments upon the Effects of Sunlight on the Colours of Pigments, with Introductory Remarks on the Propriety of Photographic Societies Discussing Artistic Questions" (in our next). The more interesting or novel points of the paper were the facts that Prussian blue and rose madder were, in oil painting, unaffected by light; that Vandyke brown could not be depended upon, and ought generally to be replaced by a mixture of burnt sienna and black. Biniodide of mercury—the most brilliant of scarlets—though liable to turn yellow and disappear altogether in the shade, and to become brown in sunlight, is preserved from both changes by being mixed with mucilage of gum-arabic—a thick mucilage of gum-arabic—while "British gum" (dextrine), on the contrary, hastens the darkening. Mr. Bow further recommended the use of tincture of iodine for colouring the spirit in thermometers, instead of the fugitive pink generally employed, and concluded with an experiment to show what he considered the best way to use mercury as an intensifying agent—i.e., to a saturated solution of mercury bichloride (corrosive sublimate) add gradually a solution of potassium iodide, with constant stirring, till the orange precipitate first formed is just dissolved.

Mr. PRINGLE considered Mr. Bow's paper would be of much value to those photographers who were now so largely engaged in supplying the demand for coloured work. It was well known that photographs had got a bad name for want of permanence, and it would never do to let the same be said of these paintings. He hoped that Mr. Bow would not belong in giving them the second part of his researches, as they would help much to enable them to select permanent instead of fugitive pigments.

Mr. W. NEILSON heartily agreed with Mr. Bow in saying that the societies would derive much benefit from the discussion of art subjects. The Edinburgh Society had not neglected the question, but there was still plenty of room to do more. He said that artists were not altogether ignorant of the fact that some pigments were liable to fade or change, and such systematic experiments as Mr. Bow had been conducting would help them materially to make proper selections. He was afraid, however, that until they went back to the good old way of making their own colours, as the old masters had done, they could never be quite certain that their work would stand as it ought to do.

Mr. J. M. TURNBULL, in moving a vote of thanks to Mr. Bow, said, that though we were not, as a society, all artists in the sense of being painters, it was nevertheless a subject in which we were very much interested. A great many of our large photographs were either in oil or water-colours; it was therefore a subject which concerned us as much as if it had been one of a purely photographic nature. He hoped that Mr. Bow's able paper would be the means of arousing the attention of artistic bodies, and leading them to discuss and thoroughly exhaust a subject of such vital importance to them. Artists generally were too much in the habit of overlooking and despising subjects of a mechanical nature in connection with their art. Mr. Bow's experiments had clearly proved that a few weeks, or even days' exposure to sunlight was sufficient to affect more or less, and in some cases entirely to destroy, many of the colours as used in oil and water-colour painting. If the artists of the present day wished their works to be seen by posterity as they painted them, it behoved them to pay immediate attention to this subject, and, if possible, to devise a remedy. He pointed out that through the fading of even one colour in the face of a portrait it destroyed the just balance of the colour, where the flesh colour was bleached, and through the darkening of the yellow it often left the face of a sort of degraded greenish yellow, which was hideous to look at. He gave, as instances of faded paintings, two well-known works of one of our leading artists, in which he had to re-paint many of the delicate

colours. If, then, this had to be done in the lifetime of the artist, what would they be in after years, when the sun of a hundred summers had shone on them? Turner, in many of his water-colours, had made a liberal use of the fugitive lakes; so much so that Ruskin, in his "British Painters," remarks "that to see one of Turner's works in perfection, or as the artist intended it to be, it would require to be seen within a fortnight from the time it was painted." It has been the fashion to look on photographs as of a fleeting and evanescent nature; but surely the much-abused silver print has a longer lease of permanence than this. He warned photographers that most of the fine effects produced in water colour on the basis of a silver print were less stable than silver prints themselves. Many colours—particularly those of the mercurial salts—could not be applied in a moist state to a silver print without bleaching it in a few minutes; that could be seen by washing the colour off again; in fact, from the moment a silver print was covered with pigments in a moist state, a process of action and reaction commenced, which resulted in their mutual destruction. With regard to what Mr. Neilson had said about the permanence of the colour of the old masters, he thought that was mainly due to their using fewer colours, and even these few were mostly found in a natural state as earths, &c. They mostly painted in a more solid manner and with a larger body of colour, while many of our modern painters glaze their work with a colour which fades in a very short time, the colours used most in glazing being the very ones the light most affects. The great majority of our modern colours were chemical combinations, many of them with a metallic base with an organic compound, which could never be a stable colour. He hoped that Mr. Bow's labours would not end here, but that he would pursue the subject, and keep the different colours exposed to sunlight, as a longer exposure might develop a great deal more than was apparent at present, and that he would favour the society with another paper on this most interesting subject. He begged to move a hearty vote of thanks to Mr. Bow for his able and excellent paper.

The vote was carried by acclamation, and the meeting adjourned, understanding that Mr. Bow would continue his experiments, and bring the results before the society.

### Talk in the Studio.

COL. STUART WORTLEY has been appointed by the Commissioners of Patents to the Curatorship of the Patent Museum at South Kensington, vacant by the death of Sir Francis Pettit Smith.

ACETATE OF LEAD FOR ELIMINATING HYPO.—A correspondent signing "M. M. C." says:—"I see there is a good deal of controversy in the News respecting the preservation of photographic prints with lead salt. I have used it for about eighteen months, and in that time have not had a print to change colour. Certainly my experience is but short, but I shall still continue to use it until it fails in its purpose. I use nitrate of lead (not acetate), and if the way in which I use it is worth having, you are welcome to it."

PHOTOGRAPHY AT THE INTERNATIONAL EXHIBITION.—The *Daily Telegraph*, in a first notice of the Exhibition, in which it professes to be not so much critical, or even descriptive in detail, as desirous of giving a general idea, thus speaks of the photographs:—"We cross to the gallery on the west side of the Hall, and find ourselves among the photographs, which well represent the condition of their branch of art, both in this country and abroad. Among the names most often occurring in the catalogue are those of A. Boucher, William Bedford, Colonel Stuart Wortley, the Berlin Photographic Company, Robert Crawshaw, and Lombardi. Such names, to say nothing of others almost as famous, are a guarantee of the excellence which those who look upon the photographs see for themselves."

PHOTO-ENAMELS.—*Anthony's Bulletin* gives the following from Mr. Atkinson, of Liverpool:—"You ask me for some information as to best enamelling process. I can only say the following gives good results: Firstly is required a clear transparency made with a toughish collodion; float the film off the glass in a solution of water strongly acidulated with sulphuric acid; wash well in several waters, and tone in a solution of bichloride of iridium and chloride of gold, in the following proportions:—

#### Toning Bath.

Sat. (in water) sol. of bichloride of iridium	...	6 drs.
Water	...	6 oz.
Chloride of gold (dissolved in 1-oz. water)	...	3 grs.



When the silver is thoroughly toned out, wash in water 8 ounces, liq. ammonia 40 drops; wash again in several waters, then float the picture on to the surface of the enamel tablet, which dry carefully with a spirit lamp or on a hot stove; when quite dry, powder the surface of the picture with finely ground enamel glaze; then place in a muffle furnace and fire until the glaze becomes transparent, and the picture is seen in all its beauty. The enamel photograph ought to be appreciated by everyone for its permanency alone."

**STEALING PHOTOGRAPHS.**—On Thursday week, at the Mausion-House, Richard Turnbull, 29, described as a photographer, was charged on a warrant, before Mr. Alderman Ellis, with larceny as servant. Mr. Wontner, solicitor, appeared for the prosecution; Mr. Chapman, solicitor, for the defence. The prisoner was in the service of Mr. George Taylor, a photographer, of Crown Buildings, Queen Victoria Street, and Forest Hill, as chief operator, at a salary of £4 a week, down to the 20th of March. About a fortnight ago, complaints were made to Mr. Taylor of photographs taken by him being exhibited outside a shop in Park Street, Camden Town, and on going there he saw, in cases exposed in the street, upwards of two hundred copies of photographs, all his own work, and many of them of quite recent dates. The name "Richard Stuart" was upon the cases as the photographer. On the first floor he found a boy named Gidney, who had formerly been in his service, and a woman whom he had known by sight as the prisoner's wife. On returning to Queen Victoria Street he asked the prisoner if he had any connection with the studio in Park Street, and he stated most positively that he had not. He was discharged from Mr. Taylor's service next day, and he then explained that the whole thing was a mistake, for the studio belonged to the lad Gidney; and, he added, a very nice place it was. For some time past the prosecutor had been missing photographs from packets which he sent from Forest Hill to his studio in the City, and also a quantity of materials used in the business, such as solution of gold and cyanide of potassium. The prisoner was alleged to have indeed a boy in the prosecutor's service to bring him gold solution from the workshops at Forest Hill, on the pretence—false, as it proved—of wanting it to intensify negatives. After his dismissal, the prisoner, replying to a communication from the prosecutor's solicitor, addressed an insulting letter to him, telling him, among other things, that he was both a liar and a fool. On arresting the prisoner at the studio in Park Street, the police found two or three hundred portraits, some views of the Albert Memorial, a large number of negatives, some gold solution, and a bottle of cyanide of potassium, worth £50 in all, which Mr. Taylor identified as his property. In reply to the charge, the prisoner denied that he had stolen the goods, saying that he could prove that he had bought them with the business from a man named Turner. The prisoner, who reserved his defence, was committed for trial at the Central Criminal Court, bail being accepted.—*Times*.

**A CURIOUS APPLICATION OF PHOTOGRAPHY.**—In our Philadelphia contemporary, Colonel Barratti gives a novel use for photography. He says:—"I had some fruit trees that wanted pruning, and there was no intelligent or active gardener at hand; time was passing rapidly; what should I do? I photographed my trees, and sent the photographs to an establishment in Turin. The next day I received them back pruned in a masterly manner. I did the rest."

## To Correspondents.

**OPERATOR.**—We have described many modes of enlarging, and given details of their results, so far as we have seen them; but we have not personally tried every method, and therefore cannot speak with certainty as to which is the best method. We have obtained very good results in several ways. With a vigorous collodion-chloride transparency, fully exposed, and fixed only, without toning, we have obtained good results. An enlarged transparency by the wet process, slightly worked upon, and then a negative from that by the wet process, has given us good results. We have used an enlarging arrangement, made for us for the purpose by Mr. Meagher, using the light of a north sky. We have seen the magnesium light worked with advantage, and have no reason to believe that the motion and variability of the flame produced any injurious result.

**SPOTTY.**—The matt silver stains with which you are troubled are not uncommon, and may arise from various causes. The most common cause is the use of a horny, repellent collodion, causing the silver solution to run in irregular greasy looking streams on its surface. Further ripening of the collodion will effect a cure in that case, or the addition of a drop or two of distilled water to each ounce of collodion will effect a cure. The edges of the plate coming into contact with an inner frame which is not scrupulously clean will cause this result. The inner frames should be constantly washed, and the plate should rest on pieces of clean blotting-paper. An old nitrate bath, containing organic matter, is more apt to produce these stains than one in perfect condition.

**H. DIXON.**—We believe that developed prints, carefully fixed and washed, will be permanent. It is important that they should be well washed after development, and before fixing, fresh hypo solution being used for the last operation. With these precautions, we think you need have no fear of your oil painted enlargements.

**DAITMOOR.**—Both will produce very good results; but the beer process of Captain Abney is the simplest, and therefore the best to try if you do not work dry.

**A LEARNER.**—A saturated solution of protosulphate of iron often leaves a precipitated deposit of carbonate or persulphate of iron, which you may discard. 2. The precipitate in your solution of citric acid and silver is citrate of silver. Excess of citric acid will redissolve it. 3. Your bath has probably become saturated with iodide of silver by constant use. See the YEAR-BOOK for instructions for getting rid of it.

**J. GROOM.**—The address of Messrs. Dando and Co. is 151, Strand, London.

**MR. HERITAGE.**—We regret that the pressing demands upon our time, and the entire absence of any such business relations, leave us no opportunity of aiding you in the disposal of the negatives. Write to Marion and Co., of Soho Square; possibly they may be able to use them.

**NIL DESPERANDUM.**—The print you enclose is pretty. The mode of mounting you describe would probably have a pleasing effect, but would have the disadvantage that if the glass were broken the print would probably be injured. We will not publish it until you state that we are to do so. The method of producing portraits with natural backgrounds was introduced many years ago, and at a much earlier period than you fancy. Mr. Edge introduced them some time before the firm you mention issued any. You will find several methods described in the NEWS about half a dozen years ago.

**A CONSTANT SUBSCRIBER.**—We regret to say that your grievance is an old one, and one upon which we have often written. We are powerless to help you. When an advertisement is left at our office and paid for, we, as a rule, know nothing more of the matter. We have constantly recommended operators not to send their best specimens to persons whose names and addresses are not given. Possibly, however, yours may be returned. The time which has elapsed is not long.

**W. J. BROMYARD.**—Vulcanized india-rubber is not suitable for the top of a water-tight bath, as the sulphur would contaminate the solution. If you use the vulcanized india-rubber to obtain elasticity, you can cover it with a piece of very thin pure india-rubber, or even with paraffinized paper; but the pure india-rubber is best.

**LEO.**—We do not know a work upon ceramic painting; but we believe a little manual exists. Write to Winsor and Newton, of Rathbone Place, and enquire.

**M. M. C.**—You will get full information on the subject in a little manual on the magic lantern, by "A Mere Phantom," published at a shilling by the Stereoscopic Company.

**S. H. K.**—A changing box containing the plates, with arrangement to drop them into the slide, and *vice versa*, made by most camera makers, is the most efficient arrangement. Failing that, a large bag of yellow calico to slip over the head and fasten round the waist, allowing room for working with the plate and slides, is used by some. We prefer to take three or four double backs, containing six or eight plates—enough for one ramble. 2. We do not wash prints in salt and water before toning. It generally makes the toning slower and more tedious.

**M. G.**—Some photographers use carbonate of soda—that is, washing soda—to neutralize the chloride of gold; but the plan is not a good one. Those who use it generally add a little at random, varying from one grain to ten grains per ounce. The chief disadvantage is, that the bath must be used within an hour or two, and will not keep. 2. There is no easy rule for an inexperienced person whereby to determine that a print is properly fixed. The mode of the solution flowing off the print is no guide at all. The nearest approach to a guide consists in the appearance of the print when examined by transmitted light, when it should look transparent without irregular opaque patches or spots. To a great extent you must be guided by time. In ordinary time weather, fifteen minutes in a solution containing four ounces of hypo to a pint of water will secure fixation.

Several Correspondents in our next.



## The Photographic News, April 17, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO. SMOKING IN THE STUDIO—PAINTERS AND PHOTOGRAPHERS —THE MANUFACTURE OF PYROXYLINE.

*Smoking in the Studio.*—Smoking is not a habit very frequently indulged in in the studio or dark-room, we should think, at any rate in this country, and it with interest but few, therefore, to know what the effects of such a habit might be in photographic manipulation. We see that very recently attention was called to the injurious results of tobacco smoking in the studio at a meeting of the Photographie Society of France; the ashes of the tobacco were said to fall upon the print and form little yellow spots incapable of being removed. So convinced was the photographer—she was a lady—of the deleterious nature of tobacco in the studio, that she taboo'd it altogether. One would have thought that tobacco ash was innocuous enough except under very special circumstances; however, our French sister has a different opinion. More danger would arise, one cannot help thinking, from the fumes of the tobacco, supposing the studio or dark-room to be ill-ventilated, and a delicate operation such as the development or preparation of sensitive collodion films was being proceeded with. Both the ammonia and nicotine evolved in the combustion of tobacco would be capable of influencing the sensitive film. The action of ammonia is well known to all operators, and that of nicotine would doubtless be very similar, for it is a volatile alkaloid, be it remembered. At times the action of both would perhaps be beneficial in intensifying the image, and if, as an Italian photographer has recently averred, blowing upon the film during development increases the density of the image, there would be no question as to the action of a few puffs of tobacco smoke in the course of alkaline development. But one has quite enough of volatile bodies in the close atmosphere of the dark room as it is; and passing over the danger of igniting combustible stores—such as pyroxyline, ether, &c.—we think photographers would do well to abstain from having lighted pipes and cigars in the dark room, at any rate. We were once in danger of being blown into the air by a photographer's cigar, and it is that, perhaps, that makes us appear interested in the matter. A gentleman wishing to show us some pyroxyline in a tin cylinder which he was employing for collodion, seized the tin with one hand, and with the other, between the fingers of which was a lighted cigar, he proceeded to twist round and remove the cover. Fortunately it was a good cigar he was smoking, and the long ash remained firmly attached to the fragrant weed during the operation of forcing the case open; but we have often thought the result might have been different had our friend been injuring himself with a cheap Pickwick.

*Painters and Photographers.*—"You don't know how useful photography is to us!" we recently heard an Associate of the Royal Academy exclaim, uttering the sentiment in perfect good faith. Well, perhaps we photographers do not, but most of us could give a very good guess, we think. Anyway, it is gratifying to hear an able artist make such an acknowledgment. The day, we fear, is very far distant when we shall see photographers recognized by the Royal Academy, in the same way, for example, as Associate Engravers are at present acknowledged by that body; but the thing is not altogether impossible. Gradually, photographers are making progress, and some day will make good their way across the threshold of the realms of art. We doubt very much whether there is any one among the Academicians or Associates of the present day who does not possess half-a-dozen cherished photographs, either landscapes or portraits, notwithstanding the general outcry against such pictures. Besides, art connoisseurs themselves do not appear to be always of the same mind. Thus, of late years, we have heard the artistic claims of carbon printing particularly extolled by art critics, the pictures not being so painfully sharp, but more

harmonious and subdued than silver photographs, we were told; and yet, only the other day the *Athenæum* reversed this verdict, and called all pictures in pigments, present and to come, anything in the world but artistic. We know that artists and art critics are widely different persons, but then one naturally looks for a certain general consistency in their ideas. In the illustrated papers, and in all portraits published nowadays, it would be idle to deny the influence and aid of photography in presenting truthful likenesses of distinguished persons; so life-like, indeed, are many sketches, that they at once impel the spectator to cry out, "That must be from a photograph!" We are glad to see the new illustrated paper, the *Pictorial World*, not only securing the aid of eminent photographers to illustrate its pages, but actually acknowledging with a good grace the source of the productions and the beauty of the art by which they were obtained. "There is no harm in admiring a pretty photograph, and calling it natural and picturesque, and all that sort of thing, only you must not say it is a work of art," seems to be the outcry of the painters.

*The Manufacture of Pyroxyline.*—There are now three large manufactories of gun-cotton in England: the Patent Safety Gun-cotton Factory at Stowmarket, which prepares the material in a pulped and compressed form; the Punshon Gun-cotton Company at Faversham, manufacturing the explosive in the form of powder; and the Government Factory at Waltham Abbey. Of course, in all these three cases the pyroxyline is prepared, not for the photographer, but for military, sporting, and engineering purposes; but there is no reason why these factories should not pay some attention to the preparation of soluble cotton, which alone is useful for photographic purposes. The demand for this material by photographers and medical men must surely be large enough at the present day to be worthy of consideration, and, perhaps, if its manufacture were carried on by those specially versed in the matter, there would be more guarantee of a uniform and trustworthy pyroxyline being secured. The price charged for explosive pyroxyline is about two or three shillings per pound, and photographers would be only glad to pay double this amount could they but obtain what they want.

### AMSTERDAM PHOTOGRAPHIC EXHIBITION.

The directors of the society "*Arti et Amicitia*," together with the committee of the Exhibition buildings, and with the assistance of the Society of Photographers of Amsterdam, are (as intimated in our last) organising an exhibition of photographs and articles connected therewith; and in publishing the following programme, the directors invite all photographers, both amateur and professional, to contribute:—

ART. 1.—The Exhibition will remain open from the 14th September until the 31st October. The directors nevertheless reserve to themselves the right of extending this term. No object exhibited can be withdrawn before the closing of the Exhibition, except under the express authority of the directors.

ART. 2.—Intending exhibitors are requested to make known their wishes to the directors not later than the 15th July, as also those who are desirous of advertising in the Catalogue, which will contain a list of pictures exhibited. Exhibitors should specify the number and nature of the objects they desire to send. The aim of the exhibition being to collect together as many artistic photographs as possible, the directors, in order to prevent disappointment, deem it well to inform intending exhibitors that *carte* and *cabinet* portraits will be admitted only under exceptional circumstances. Coloured or retouched photographs, like those met with in commerce, will not be admitted.

ART. 3.—The photographs should be framed, but not protected with glass.

ART. 4.—Objects which have been accepted provisionally (see Art. 2) must be addressed, carriage paid, up to and including the 1st September, "*A la Commission Directrice de la Exposition a la Societe 'Arti et Amicitia,' a Amsterdam,*" and



should be accompanied by a letter of advice signed by the exhibitor, and containing the number and description of the objects forwarded. The exhibitors are likewise requested to add any details that may be of interest regarding the objects sent in, such as dry or wet plates, instruments employed, duration of exposure, &c., and any other matters that the exhibitors may deem useful to be made known. Every object must bear the name of its exhibitor.

ART. 5.—Those exhibitors who desire to dispose of their exhibits may forward the prices of the same; in case of any purchases being made, a commission of ten per cent. will be charged. The prices must not be written upon the objects exhibited.

ART. 6.—An executive committee will be charged with the examination of the objects sent in for exhibition, and will decide as to their admission or rejection.

ART. 7.—Honourable Mentions, divided into three classes, and which will only be awarded to the producers of the photographs, will be placed at the disposal of this committee.

ART. 8.—The directors will return all exhibits free of expense where the exhibitors reside in the Netherlands, and as far as the frontier in the case of foreign exhibitors.

ART. 9.—The directors take upon themselves to insure the exhibition buildings, and will, moreover, exercise the greatest possible care of the objects entrusted to them; but they cannot be responsible for any damage or accidental loss.

<i>For the Direction of the Society</i>	<i>For the Executive Committee—</i>
<i>Arti et Amicitie—</i>	H. L. J. HAACKMAN, President.
L. LINGEMAN, President.	J. A. RUST, } Secretaries.
J. H. RENNEFELD, Secretary.	F. A. VAN WEST, }
Amsterdam, March, 1874.	

## BENGAL PHOTOGRAPHIC EXHIBITION.

The following is the Report of the Judges appointed to award prizes:—

*To the Honorary Secretary, Bengal Photographic Society.*

SIR,—We have the honour to report, for the information of the Committee of the Bengal Photographic Society, that we have carefully examined the photographs under exhibition at the Dalhousie Institute, and have awarded the various prizes as follows:—

*By His Excellency the Viceroy.*—Prize A—a Gold Medal—For the best single photograph in the room. This picture is to be chosen first by the judges, and then to be excluded from competition for any other prize (open to all comers)—To H. P. Robinson, of Tunbridge Wells, England, for No. 73, entitled "Preparing Spring Flowers for Market," which, in artistic treatment, natural arrangement, and technical excellence, we regard as the finest photograph ever exhibited in this country.

*By the Society.*—Prize C—a Gold Medal—For the best series of at least six landscapes, taken and printed in India by any member of the society—To Messrs. Bourne and Shepherd, for Nos. 196, 216, 218, 227, 229, and 232.

Prize D—a Silver Medal—For the best series of at least six portraits, taken and printed in India by any member of the society—To Messrs. Bourne and Shepherd, for Nos. 234, 240, 242, 243, 245, and 246.

Prize E—a Silver Medal—For the best series of at least six photographic pictures, landscapes or portraits, taken either in or out of India by any member of the society, not being a photographer by profession, to be selected by the judges from those for which no other prize shall have been awarded at this Exhibition—To G. L. Kemp, Esq., for Nos. 155, 156, 157, 158, 170, and 171.

Prize F—a Bronze medal—For the best series of at least six photographic pictures, taken in India by any member of the society, to be selected by the judges from those for which no other prize shall have been awarded at the Exhibition—To Major Millett, for Nos. 109, 110, 111, 112, 115, and 118.

Prize G—a Silver Medal—For the best series of at least six photographs of Indian subjects, exclusive of landscapes and antiquities, taken by any member of the society—To Dr. R. Brown, for Nos. 394, 396, 397, 402, 403, and 404.

Prize H—a Silver Medal—For the best series of at least six photographic pictures of Indian antiquities, taken by any member of the society—To Messrs. Bourne and Shepherd for Nos. 188, 190, 191, 193, 197, and 198.

*By the President.*—Prize I—a Gold Medal—For the best series of at least six photographic pictures of any kind taken in Europe, America, or Australia, excepting those, if any, for which the Lieut.-Governor's prize has been awarded (open to all comers)—To H. P. Robinson, Tunbridge Wells, England, for Nos. 74, 75, 76, 77, 78, and 79. These are marvels of photographic excellence, both as art studies and in successful manipulation. No. 79 is a charming picture, and the landscape No. 74 is especially admirable.

Prize J—a Silver Medal—For the best series of at least six

photographs of young children (open to all comers)—To W. F. Westfield, for cases Nos. 437 and 438. This gentleman has exhibited also some excellent cabinet portraits, and a series of very well executed groups, as well as some very successful pictures of horses and dogs.

*By Captain J. Waterhouse.*—Prize K—a Silver Medal—For the best series of at least six landscape views taken out of India; to be selected from those for which no other prize shall have been awarded at the Exhibition (open to all comers)—To F. Beasley, Junior, St. John's Wood, London, for Nos. 52, 53, 54, 56, 57, and 61. These pictures are perfect gems of landscape photography, and, though taken by a dry-plate process, are remarkable for softness, delicacy of detail and half-tone, and aerial perspective.

*By the Honorary Secretary.*—Prize L—a Silver Medal—For the best series of at least six photographs, printed in permanent pigments, by the carbon process, or any of the photo-mechanical processes (open to all comers)—To Captain J. Waterhouse, Surveyor-General's Department, for Nos. 421, 422, 428, 429, 433, and an unnumbered reproduction, "Tobias and the Angel," by the photocolotype process. The reduced map No. 421 is wonderfully clear, delicate, and distinct, and the reproductions of Indian-ink drawings of insects are perfect. The process, which has been worked out by Captain Waterhouse himself, promises to be very valuable, especially in India, where the high temperature precludes the use of other photo-mechanical processes which involve the use of gelatine.

*By G. L. Kemp, Esq.*—Prize M—a Silver Medal—For the best series of at least six photographs, reproductions of work of art, not smaller than 12 by 15 (open to all comers)—To J. Noone, Melbourne, for Nos. 5, 8, 9, 10, 14, and 25.

We beg, also, to recommend the award of the following extra prizes:—

Gold Medal—To Marshall Wane, Isle of Man, for Nos. 72, 68, 66, 63, 70, and 64. For admirable lighting and modelling, natural and easy pose, delicate and textural rendering of dress, simplicity and subordination of accessories, No. 72 is hardly to be surpassed; No. 66 is a most successful composition picture.

Silver Medal—To W. B. Woodbury, for Nos. 182, 183, 184, 185, 186, and 187. These pictures by the Woodbury-type Photo-mechanical process are exquisite, and illustrate the remarkable applicability of the process to a great variety of subjects. Portraits, landscapes, reproductions, both from engravings and original paintings, and copies of articles of *virtu* and porcelain, are all represented here, and all excellent, the most delicate gradations of tone being perfectly reproduced. It is undoubtedly the most successful of all the substitutes for silver prints, and for small plates up to 10 by 8 leaves nothing to be desired. The specimens shown exhibit considerable variety of tint, and illustrate how readily the tone may be modified to suit the subject.

Silver Medal—To W. England, St. James's Square, Notting Hill, London, for his series pictures of statuary, which are models of successful lighting and softness, and photographic skill. This gentleman exhibits also an excellent series of landscapes.

Silver Medal—To the Military School of Engineering, Chatham, for Nos. 339, 340, 341, 342, 344, 345, a magnificent series of large-sized, admirably-chosen, and well-executed landscapes. The same School has sent some very well executed specimens of Heliotype.

Bronze Medal—To D. Hedges, Lytham, for his series of photographs of animals.

Honourable Mention—To Jean Gut et Compagnie, Zurich, for a series of small portraits. These pictures deserve prominent notice, but do not fall within the terms of any of the series for which prizes were offered.—To the Surveyor-General's Department, for the series of photographs of Indian fabrics and race cups.—To Colonel Stuart Wortley, for his splendid series of large, life-size portraits, taken direct in the camera.—To Mr. Hubbard, for two small but excellent composition pictures.—And to Mr. N. K. Cherril, for an admirable series of pictures of woodland and landscape scenery.—To Mr. Douffet, for his single portrait of a lady in Oriental costume.

J. L. GASTRELL.  
R. A. STERNDALE.  
C. J. JACKSON.

## PHOTOGRAPHY IN NATURAL COLOURS.

BY M. DE ST. FLORENT.\*

*Aqueous Solutions.*—If we have adopted alcoholic baths for our preparations, it is because these are prepared more rapidly, and with great regularity. But aqueous solutions may also be employed without any notable difference in the results. The employment of aqueous baths is preferable in all cases where albumenized paper is made use of.

*Employment of Collodio-Chloride of Silver.*—Heliographic images upon paper or glass may be obtained by employing collodio-chloride of silver. The impressions upon glass are very delicate, but they lack intensity. The formula of M. Van Monekhoven was adopted for these experiments.



It is admitted that the production of images upon glass of a stable nature is the desideratum in heliochromy. If, indeed, we could obtain a view or portrait under these conditions, the cliché might be considered a matrix from which an indefinite number of prints could be obtained by means of the processes above described for securing copies of painting on glass. The impressions would be produced in their true sense.

*Fixing the Images.*—The problem of fixing appears to be a great difficulty to solve in a complete form. It may, however, be deemed, to some extent, overcome from a practical point of view, as the prints are capable of being preserved for an indefinite period in an album, while they are also capable of sustaining an exposure to diffused light of a pretty long duration. We will record certain experiments which we have made in the matter.

To fix the image, it is necessary to find a substance which leaves the sub-chloride intact, whilst it dissolves away the chloride, or transforms it into a product easily eliminated. It is necessary, moreover, to prevent the ulterior reduction of the sub-chloride forming the coloured image, but, these results obtained, it would not then even be conclusive as to the stability of the impressions.

In the present state of science, one hardly knows, in fact, how to explain the effects of colouring which the sub-chloride of silver presents under the influence of active rays, and the ingenious hypotheses which are made on this subject do not serve to guide one in the selection of a fixing agent. It may be remarked, nevertheless, that in most cases the colours do not disappear until the sub-chloride has been altered in consequence of a reducing or oxidising action taking place. An attempt might, however, be made to preserve the material from subsequent chemical change, and this we have tried to effect.

The image, on coming out of the printing-frame or the camera, is but very slightly stable; it disappears in a few seconds if exposed to the light, and in a shorter or longer period when kept in darkness, by reason of the action of the bichloride of mercury. A simple washing in water or alcohol fixes it a little, and then it becomes possible to preserve it for a long time in an album.

*Employment of Ammonia and Alkaline Chlorides.*—More stability is given to the print if it is plunged, after washing, into a weak solution of ammonia, prolonging the immersion for several hours, and then passing it into a concentrated solution of chloride of sodium or potassium, which is allowed to act as long as possible, removing the same frequently, and maintaining it at a temperature of about 60° Centigrade. The alkaline chlorides dissolve, in fact, especially when warm, the chloride of silver, without sensibly attacking the subchloride, in such a manner that on coming out of the bath it blackens slowly enough in the light, especially if exposed to a newly-prepared chloride bath.

It is well to free the print, in the first place, from any calomel it may contain, which blackens on contact with ammonia, or becomes yellow more or less rapidly under the influence of light. This is done, as we have already pointed out, by transforming it into mercurial chloride, either by means of chlorine water or *aqua regia*.

*Employment of Chloride of Lead.*—Chloride of lead obtained by double decomposition in the pulp of paper, nitric acid, sulphuric acid, &c., also has a fixing impression upon the image. M. Niepce de St. Victor has already indicated how to accomplish this object with a varnish of chloride of lead and dextrine.

*Action of Gelatine, Albumen, Varnish, &c.*—The stability of the impressions is notably improved if they have been obtained upon paper strongly albumenized or gelatinized. Finally, a much greater degree of permanence is obtained if the print is covered with a thick varnish, either of gelatine mixed in certain proportions with chloride of ammonium and bichloride of mercury, or with any substance susceptible of liberating an oxidizing agent under the influence of light.

We will now make a few remarks in reference to recording the re-actions which are produced. The light tends to reduce the subchloride of silver, and also the white chloride, if this has not been completely eliminated. In consequence, free chlorine is produced, which combines with the organic matter serving as support, or escapes into the air. It is therefore necessary to seek to render, every moment, to these substances the quantity of chlorine which they lose, and this, it will be admitted, could be done by superposing a compound capable on reduction by light to give out an oxidizing agent, chlorine or oxygen. In this way it is possible to explain the preservative action of the mercurial chloride, very dilute nitric acid, and finally sulphuric acid, or sulphate of mercury, proposed by M. Poitevin.

If the proportion of these substances is too great, the oxidising agent in excess will exert a subsequent oxidising action upon the subchloride, and will make the image disappear. The varnish, albumen, gum, dextrine, and especially gelatine, then act in the capacity of restrainers, in modifying the action.

It is known, indeed, that all these substances are oxidised under the influence of solar rays. It is also known that, according to the experiments of Niepce de St. Victor, after an exposure to the sun for some period, they acquire the property of very marked reducing agents. Their oxidation consists, therefore, in the liberation of a portion of the reducing element, hydrogen. This hydrogen, we can understand, influences the re-actions by weakening the effect produced upon the subchloride by the chlorine or oxygen in excess.

Whatever may be thought of the explanation which we have just given, experience proves that if a thick film of gelatine is poured upon a heliochromic print which has not been freed from its excess of mercurial chloride, it becomes stable enough to support, without very much alteration, an exposure of several hours to solar influence. The fact is rendered the more apparent if we cover only a portion of the image with a film of gelatine and expose it to the light. The uncovered portions bleach completely in a few moments, while those which are covered by the preservative coating of gelatine remain, and resist the action of light for several hours. The high lights, however, after a time blacken by degrees, and the print disappears in a greater or less period.

The proportion of oxidising agents is not large enough, as a matter of experience, to make good the losses sustained by the chloride and subchloride of silver; but we may assume that, guided by the theory of equivalents, it will be possible, after a number of essays, to arrive at such proportions as will secure stability for all practical purposes.

## EFFECTS OF SUNLIGHT ON THE COLOURS OF PIGMENTS.

BY R. H. BOW, C.E., F.R.S.E.\*

It has often appeared to me as a strange thing that, while the followers of almost all the other professional and scientific occupations form themselves into societies for the discussion of questions of practical or speculative interest to them, the different associations of artists appear to manifest little interest or industry in extending their knowledge of the scientific and practical departments of their calling. This impression which I entertain may, very possibly, be erroneous; but, if so, I plead that it arises from their discussions and advances in knowledge being kept too much to themselves.

Assuming that there is remissness on the part of the artistic profession in not keeping the departments of science with which they should especially deal abreast with the main body in the rapid forward march of the present times, I submit that the photographic societies may very legitimately step in and take up the neglected work. On the

\* Read before the Edinburgh Photographic Society.



one hand we find many true artists enrolled in their membership, so that they are quite capable of dealing in a liberal spirit with æsthetic questions and discussing the laws of art; and, on the other hand, photographic societies are so abundantly supplied with the scientific element that they are well prepared to work in the fields of chemical and mechanical research in connection with the materials and processes employed at the easel.

There can be no doubt that the importing of this new work into the lists of subjects to be dealt with by our societies would infuse new life into their meetings, and save from the weakening effects sure to arise from too much recidivism of older and somewhat worn-out topics. And this extension of their sphere of activity would be a natural and healthy development of photographic societies. At their first institution they very properly confined their attention to subjects lying within the narrower limits of what was specially photographic, and chiefly in connection with the reactions of their particular chemicals and the mechanical and optical arrangements of their apparatus; but soon they began to feel an interest in chemical and optical information outside of their art profession, and from artists—who at first stood aloof or in antagonistic attitudes towards them—at length enlisting in their ranks, the subjects dealt with assumed more frequently an artistic character, and the connecting bonds between photography and the older sister arts are becoming every day stronger and more numerous. The photographer often now employs the artist to complete his work, and the artist is learning to lean more and more upon the aid of the photographer; and the combination of the artist and the photographer in the same individual is becoming less an exceptional than a common occurrence. The photographic art societies may now, therefore, have arrived at that period of their growth when they may presume freely to range over and explore the subjects that in times past have been regarded as the special preserves of the artist.

There are two or three subjects of this class that I have thought of venturing to break ground upon before the Society; but that which I have chosen for to-night belongs to a sort of debatable land—it takes up a small part of the inquiry into what mischief our particular friends, the so-called chemical rays, are working upon the artist's colours.

#### EFFECTS OF SUNLIGHT UPON THE COLOURS OF PIGMENTS.

The undertaking a subject like this is very apt to end in experiences such as a traveller should meet with who suddenly resolves to explore a distant mountain range. From his starting-point the work seems circumscribed in extent, and of simple and pleasant execution; but soon after beginning the actual exploration, he acknowledges that a portion only of his original enterprise will suffice to swallow up all the time at his disposal, and, as he penetrates into the gorges, and loses his bearings amidst the nearer subordinate elevations, his energies become engaged upon and engrossed by the minutest details. So the subject of the effects of sunlight upon the colours of pigments, although at first sight it appears a simple and not very extensive one, is no sooner attacked than a number of unexpected points of interest come into view, and questions arise which would require for their satisfactory solution the carrying out of a great many experiments of long duration. I find, consequently, that I have only made a beginning, of the work, and, from not foreseeing the complexities of the subject (especially those arising from the very different influences exerted by the mediums with which the pigment may be mixed), this beginning is far from a systematic one.

The pigment, or colouring matter, may be presented to the influence of the sun's rays under various conditions:—

1. It may be in a liquid or dissolved state, the menstruum being water, spirit of wine, or other fluid.
2. It may be presented as the pure powder, or as a stain or dye upon paper or other absorbent body.
3. It may be in combination with gum, gelatine, or other medium soluble in water. Such addition, while it serves to

mechanically fix the powdery pigment, has the further effect of protecting it more or less from the air and gases, and possibly also of obstructing molecular changes.

4. It may be combined with pure drying oils, or with spirit or turpentine varnishes.

5. The oils or varnishes may be combined with other substances that may chemically affect the pigments—as when the oil is boiled with litharge or mixed with sugar of lead or other dryers.

6. The pigment may be presented as in encaustic work, or in the form of enamels or glasses.

In a systematic treatment of the subject it might be proper to conduct the experiments upon each pigment under as many of these headings as its nature would admit of. The few experiments which I have made will, however, be ranged in the two classes of ordinary oil and water-colour painting. They were originally undertaken in 1871, simply to satisfy myself as to the permanency or otherwise of some of the ordinary tube colours used in oil painting, as I had at that time resumed the brush as an amateur. The results were considerably different from what I had been led to expect. Since being asked to contribute a paper, I have endeavoured to extend the scope of the experiments; but the time for this has been too limited, and, instead of clearing up the subject, these have rather served to raise doubts, and show that it is a very complicated one.

In conducting the experiments the obvious arrangement was to paint the colours on a suitable board, in the form of bands across it, and obscure a portion of each band when the board was exposed to the light.

The experiments of 1871 were conducted so that one-half of each band of colour should lie over a coating of glossy whitelead paint, while the other half was upon white cardboard, so much magilp being used that the half upon the painted ground dried with a gloss, while that on the simple cardboard had a dull surface. Part of each half was obscured, but it may here be stated that this different treatment of the two halves had no marked effect upon the results. This set of experiments will be referred to as sheet A.

Of the recent experiments begun on February 23rd, those with oil colours will be referred to as on sheet B. In these Robertson's medium was used to mix with the colours and pigments, and, after drying, this was further used as a varnish over them. Sheet C contains the recent experiments with water-colours and dyes. The amount of exposure to the sun which sheets B and C have received has not been half of that which might have been secured by frequently shifting them so as to face the sun when it happened to shine.

In giving the results it may be best to collect together all that is to be said of each particular pigment; and, taking first the browns, the most important of these, from its almost universal use, is—

*Vandyke Brown.*—In the experiments with this, in 1871, I was much surprised to find it soon lose both in depth and quality. In sheet B the colour was not nearly so soon affected, and, although the change is quite observable, it is not very important up to the present date. In the water colour sheet C the loss of depth of colour is much greater. The general result is, that vandyke brown fades in the sun, but that this may be retarded by a coating of varnish. The pigment does not, however, deserve the confidence that artists have placed in it; and a very fair substitute may be had in the mixture of black and burnt sienna, used by our esteemed member, Mr. Norman Macbeth. Such a mixture possesses very considerable transparency, its permanence is assured, and browns of any quality as regards warmth or coolness may be made; but one or two definite mixtures, put into tubes, so that the artist might have a readier knowledge of what he is about, would be desirable.

(To be continued.)

#### SPECTRUM ANALYSIS AND PHOTOGRAPHY.

BY J. NORMAN LOCKYER, F.R.S.

A COURSE of Cantor lectures on "Spectrum Analysis as Aided by and Aiding the Arts," delivered before the



Society of Arts, contains much interesting information in relation to photography as applied to the registration of results in spectrum analysis. In commencing, Mr. Lockyer recalled a paper read before the society on photography by the late Mr. Claudet thirty years ago. In that lecture, Mr. Lockyer said, "he gave an account of the progress which had been made up to that time in an art and a science which is now perfectly familiar to all of you; I refer to photography; and it is excessively curious that his lecture on the origin of this science, and my present lecture on the application of photography to spectrum analysis, are complementary to each other, so much so that one may almost say that Mr. Claudet's lecture, admirable though it was, was incomplete, because he did not show in it—as of course he could not show—how certain matters which he referred to in that lecture have been dealt with in the light of modern science." Mr. Lockyer proceeded:—

If you carry yourselves back to the year 1839, some four years before this lecture to which I refer was delivered, you will recollect that M. Niepce had at that time brought photography to a more practical realisation than it had been by any of his predecessors. He had then for some years allied himself with Daguerre, and the Daguerreotype was already in existence. The action of iodine on silver, first discovered by Fox Talbot, had been fixed by the vapour of mercury.\* Now, in the Daguerreotype we had not the action of light in its ordinary sense; and men's minds were very much exercised as to what could be the real cause of the effects which were then being revealed. Mr. Claudet, in his lecture, points this out in a most admirable way, and I will summarise, if you will allow me, just some of the principal points to which he alludes. You had a beam of light falling on a plate. On this plate was a certain chemical compound. What part of the sunlight, or was it sunlight at all, which so acted upon this compound, that you got an image more or less permanent? What more natural than that this question should be investigated by means of various tinted glasses? The solar beam which the experimenters then used they made to pass through glass, now of one colour, and now of another. I can show you, by means of this electric lamp, nearly what they did. Imagine the lamp to be the sun; in the path of the beam differently coloured glasses are placed. We have now the action of a red glass; we now change the red glass for another one, and now we have the action of a green glass. There was an immense deal of difference of opinion concerning the action of light as investigated in this way. In fact, I shall have shortly to show that Mr. Claudet and a very distinguished French physicist, M. Becquerel, were considerably at variance with regard to one particular point which came out from this kind of investigation. But we had not long to wait. Sir J. Herschel, in the year 1839, pointed out that it was not a question of investigating these new qualities of light at all by means of coloured glasses; they should be investigated by means of the spectrum. Sir J. Herschel, in three papers, communicated to the Royal Society in the years 1839, 1840, and 1842, showed that the only philosophic way of investigating this problem was really by obtaining a pure spectrum, such a one as I now throw upon the screen. You see that we have at once, in different parts of this spectrum, exactly what we get at different times when we deal with red glass, yellow glass, orange glass, green glass, blue glass, and so on. And having such a spectrum as this to deal with, and supposing such a spectrum thrown on to the photographic plate, it is quite clear to all of you that if there was something magical or unknown in the red rays which gave us this new action on the molecules of the particular chemical compound employed, or whether this magic really resided in the blue rays, that we should at once have this pointed out to us in the most unmistakable manner, by the action in the part of the plate on which the red image fell, or in the part of the plate on which the blue image fell. Now, although Sir John Herschel was the first in this country to point out the extreme importance of this point of view, he was by no means the only one. Then, as now, there were distinguished Americans who were well to the front, and among them was Dr. Draper, the father of another Dr. Draper whom I shall have to speak of by-and-bye. Those of you who are familiar with the enormous step in advance which was taken in spectroscopic investigations by Wollaston, who substituted a slit for a round hole, will perhaps be somewhat surprised to find that the first observations were conducted by throwing a converging beam of

sunlight, giving an achromatic image of the sun on the plate, through a prism. This method of procedure of course did not go so far as a better one might have gone, but it went a considerable way. Sir J. Herschel, from his observations made in this manner, stated that he had found a new kind of light—a new prismatic colour, "lavender grey," altogether beyond the blue end spectrum, such as you have seen it on the screen—altogether beyond the blue end of the spectrum, not the red end. Professor Draper, on his part, also came in the main to the same conclusion, stating that he had discovered a "latent light."

When we have come from the year 1839 to the years 1842 and 1843, we find a great advance, an advance just the same as far as photography goes, as Wollaston's advances on Newton was with regard to spectroscopic observation. Both Becquerel and Draper introduced, instead of this achromatic image of the sun, the simple arrangement of throwing sunlight through a slit and a proper combination of lenses on to a plate. The result was that on the 13th of June, 1842, Becquerel did what I may venture to call a stupendous feat.\* He did what has never been done since, so far as I know. He photographed the whole solar spectrum with nearly all the lines registered by the hand and eye of Fraunhofer. I do not mean merely the blue end of the spectrum, as you may imagine, but the complete spectrum, from the "latent light"—the ultra violet rays of Draper—to the extreme red. Draper also did something like the same thing, but not quite the same thing, in what he calls a "tithonographic representation" of the solar spectrum. He gives certain lines in the extreme visible blue part of the spectrum,† certain other lines, which none but Becquerel had ever seen before (Draper's work being done nearly a year later), and in the extreme red—beyond the visible red of the spectrum, he gives other lines which even Becquerel had not photographed. This of course was such a tremendous revelation to both these men that you can imagine considerable discussion arose, not only in their own minds, but in the minds of others, with regard to the work which they had done. Becquerel found, from an absolute comparison between the Fraunhofer lines which he had photographed and the Fraunhofer lines which Fraunhofer himself had registered, tremendous evidence in favour of the fact that this new chemical agent which was astonishing the world, whatever it was, was not something absolutely and completely independent of the visible rays. Draper, on the other hand, in his "tithonographic representation," had, for some photographic reason or other, not succeeded in registering the lines in the yellow, orange, or green part of the spectrum, although he had fixed the lines in the blue, in the extreme violet, and in the extreme red; and he considered himself justified by his experiments in coming to exactly the opposite conclusion to that at which Becquerel had arrived, namely that the light, whatever kind of light it might be, which was at work in effecting this chemical change which rendered photography possible, was something absolutely and completely independent of the ordinary light which the retina receives.

This was in the year 1843. I need not tell you that by the year 1845, in which year Mr. Claudet read another paper before this Society, further investigations by means of the spectrum had shown that Dr. Draper's idea was heretical, and at the present moment you know it is the general opinion of physicists, an opinion founded upon the work which has been done to advance photography and other researches since that time, that the radiations which you get from any light source, from the extreme violet to the extreme red, differ only in the rate and in the magnitude of the vibrations which are at work, so that I claim for the application of photography to spectroscopy, as a first result, the establishment of this great fact, that the visible, the chemical, and the heat rays are really part and parcel of the same thing, that thing being a system of undulations varying in rate and wave length from one end of the spectrum to the other, whether you consider the visible portion, or the invisible rays—those outside the blue, in one case, and outside the red in the other. But that is not all; I claim another thing for the application of photography to spectroscopy. Sir J. Herschel, so soon as he applied the prism, stated, in a communication to the Royal Society, that it was no longer possible to proceed with that branch of research under the best possible conditions, unless opticians would construct lenses which would bring the visible and the chemical rays into absolute coincidence. This is now done by our Rosses and Dallmeyers in the camera lenses, and that is the second great feature which I claim for the application of photography to spectroscopy.

(To be continued.)

\* "Bibliothèque Universelle de Genève," vol. xxxix.-xl., 1842, p. 341.  
 † *Philosophical Magazine*, vol. xxii., p. 360, 1843. For his earliest work see *Journal of the Franklin Institute* for the year 1837.



# The Photographic News.

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## PRINTING FROM TWO NEGATIVES.—DENIER'S METHOD.

CONSIDERABLE interest has been felt by all who have seen the charming examples of softly defined portraiture—a few specimens of which were sent to the last exhibition of the Photographic Society by M. Denier, of St. Petersburg—as to the mode by which the roundness and singularly perfect modelling, the perfect definition without cutting sharpness, were obtained. Various rumours have been in circulation. Some maintained that the softness was the result of printing through a medium which prevented perfect contact between sensitive paper and negative, in the manner adopted by Carl Meinerth in his photo-mezzotints. Others, that a plate of ground glass was interposed between the lens and the sensitive plate in producing the negative. Others have suggested that a printing-frame similar to that introduced by Mr. Jacobi, in America, was employed; and others have suggested the use of two negatives. But as M. Denier sold his secret with conditions of secrecy, no certainty was obtained. A gentleman who recently visited St. Petersburg, and saw M. Denier and other photographers there, recently favoured us with a call, and from him we learn that in Russia the process has been patented, and that one of the licencees under the patent described the details. The process employed is, it seems, that originated and patented a couple of years ago in America, and since rediscovered in Italy, and consists in the use of two identical thin negatives, one of which being in contact with the paper gives sharpness of definition, whilst the other, superposed on the first, is, of course, separated by the thickness of the glass, and gives diffused definition, the blending of the two giving the happy compromise between fuzziness and extreme sharpness. There is sufficient of fine definition to do justice to delicate lines requiring crisp rendering; and sufficient softened or diffused definition to remove the crude, hard effect of excessive sharpness, which is sometimes offensive in its rendering of wrinkles, rugosities, freckles, and similar facial blemishes. A greater range of tones also becomes possible without risk of hardness. Starting with bare glass for the minute points of perfect blackness, and proceeding up to a degree of opacity which shall leave points of white paper for the highest lights, with all the possible intermediate gradations, gives us the highest quality of negative. But it not unfrequently happens that, starting from the same point, and continuing the intensification until opacity enough is obtained to secure absolute white in points of the highest lights, there is a tendency to bury detail and cause hardness. The less

intensifying a negative undergoes, as a rule, the more perfectly it retains all the delicate gradations of half-tone. Two thin negatives are, therefore, more likely to retain soft gradations than one intense one, whilst the combined opacity of the two thin negatives in the highest light will probably be quite equal to that of the one intense negative; so that the issue of the combination is the highest range of scale which the hardest negative can give, with an infinitely greater number of steps or gradations between the extremes of the scale.

The mode by which M. Denier obtains his two identical negatives did not transpire. Some difficulty exists in most of the methods employed. If taken in two sittings in immediate succession, there is risk of variety in expression and other minor points. If taken at the same moment on two halves of one plate, there is inevitably a slight difference in the angle. The method described by a Canadian amateur in our pages some time ago, in which both negatives are taken at one sitting by coating both sides of the plate with collodion, possesses many advantages. A process described by Signor Montagna in our pages might also be employed; but the paper negative from a paper print would lack some delicacy. The method we described recently, in which a duplicate negative is produced by the powder process, is probably the most promising method of any, as it secures to the photographer the greatest control over the quality of results. At any rate, there are various modes available for those who are anxious to try the experiment of producing soft and finely gradated prints like those of M. Denier.

## THE EFFECT OF VARIOUS KINDS OF ACIDS ON DEVELOPMENT.

At a recent meeting of the Photographic Section of the American Institute a discussion arose on the influence of different acids on the deposit produced by the developer. After some conversation,

Mr. Gardner said: I have adopted a practice different from anything I have ever heard of. A chemist told me that sulphuric acid was the best acid to unite with iron, and wherever I had to use iron I would find it to be the most useful. Upon that suggestion I took sulphuric acid and nitrate of potash in equal proportions, and then added a quantity of water, so as to make a stock solution, and to this stock solution I would add an equal quantity of alcohol, and this was added to the iron solution instead of acetic acid. I have used that, more or less, for eight years, and the best negatives and best ferrotypes I have made in my life I have made with that developer. I had the idea that the same thing might do, where they made the gun-cotton, to take the waste solution. I tried it, but I found it would not answer the purpose.

Mr. Anthony: I can bear testimony to the fineness of Mr. Gardner's ferrotypes; for they are certainly some of the finest I have ever seen.

Mr. Gardner: One other point. Acetic acid is very commonly used at the present time for washing the print when it comes from the printing-frame. I tried sulphuric acid for that. I took one ounce of sulphuric acid to sixty-four ounces of water, and that was the stock solution. Then I made the water acid with that stock solution, and put my pictures in that, and I doubt whether anybody could tell the difference between the action of acetic acid and sulphuric acid used in that way.

Mr. Chapman: Sulphuric acid will, no doubt, do no harm, only it reduces sensitiveness. I tried the experiment some time ago, taking different kinds of acids—citric, nitric, sulphuric, and acetic acid. I put a little silver in a bottle and added some iron. I took some of that, acidified with these acids, in test tubes, and examined the deposits. Nitric acid gives me the whitest deposit, and sulphuric acid gives the next, both of them apparently white metallic silver. The acetic acid gives a dark brown deposit. The same amount of deposit will make more opacity. Citric acid gives a dense black deposit. The best working deposit that is thrown down, for intensity, is the acetic acid. Some years ago we required vigorous negatives, but now we only want the detail, and supply the high lights with a pencil afterwards. No doubt you can get the same sensitiveness with a developer made from



acetic acid or from sulphuric acid, but you will get more detail with the same exposure from acetic acid. The use of these developers depends a good deal upon the question whether you are working for sensitiveness or fineness of results.

The President: The use of the acetate of soda has the effect of making a weak solution do the work of a strong one, by neutralizing the sulphuric acid and taking that out of the iron, so that you can use a much weaker solution of iron, and get more intense negatives. The ratio of the developer ought to correspond to the strength of the bath. A very strong developer and a weak bath will make thin negatives, because the ratio of the silver to the iron is small. The deposit of the image on the sensitive film is produced by the iron, and not by the silver. The deposit is thrown down according to the ratio between the two. If there is a large quantity of free nitrate of silver on the film, and the iron is weak, the image will be intense. If you have a fifty-grain bath, you can use a strong developer; if you use a thirty-grain bath and a twenty-five-grain developer, it will give a thin negative.

Mr. Anthony: My experience in the use of acetate of soda has been very favourable. Many years ago I had time to experiment, and obtained the best results in instantaneous exposure in using a small quantity of acetate of soda. At one time I kept on hand for toning an alkaline acetate of soda, and trying some of it in the developer one day, I found I got more detail and more rapidity of action than I could by the ordinary iron developer, and after that I always used it.

### FRENCH CORRESPONDENCE.

SOME days ago Nadar, the well-known Paris photographer, called the attention of the press to an experiment he was about to make. This was no other than an attempt at aerial photography, our friend being desirous of taking a photograph from the ear of a captive balloon at a certain distance from the earth, whence the panorama from below could be seen, a feat, by the way, which M. Nadar had already accomplished some years ago. It appears obvious that for strategic purposes in time of war, and for topographical purposes in time of peace, photography thus applied would render valuable assistance. Military science, which employed with advantage, in the campaigns of the first Republic, the corps of aeronauts formed by Courtelle and Conté, at the Ecole de Mendon, would be able to make good use of aerial photographs. Nadar believes fully that in surveying, also, aerial photographs will be of importance, and he is not the only one holding that opinion. A well-known engineer, M. Andrand, has also a similar idea, and he states that with photography to assist the surveyor, he would require no more theodolites, no more plane-tables, and none of the other elaborate paraphernalia which he is wont to employ; five hundred photographs, taken at a thousand hectares per day, would furnish a survey of the whole of France in twenty days.

It is not only in France that application is being made of our art in this connection; in Italy, also, they are busy doing the same. The skilful London optician, M. Negretti, if we remember rightly, made several practical experiments in this direction, but, so far as we are aware, M. Nadar is the only successful photographer who has been enabled, after numerous and laborious trials, to obtain in Paris, in 1866, a partial survey from the ear of a balloon. The photograph then secured is still exhibited in M. Nadar's studio in Paris.

To succeed in a work of this kind, it is necessary to have a very calm day, and apparatus suitable for the purpose. To prevent the movements of the balloon, the chief and only precaution to be taken is to have the machine sufficiently light that it keeps the ropes which fasten it to the earth straight and tight. There are still the gyrations of the balloon to be overcome, but these M. Nadar has prevented by a most simple arrangement. The instantaneous nature of his process, moreover, guarantees the success of his plates. I was only too happy to accept Nadar's invitation to be present during the experiment; but unfortunately, on the day in question, a storm took place, which rendered the ascent impracticable. We can only hope to be more successful another time.

M. Puttemans offers at the present moment to photographers a system of painting in oil colours, which may be practised, he assures all, without the operator possessing any previous artistic training. A workman, or even a child, may, he says in his circular, obtain satisfactory results. As I desired to learn something of the process, I not only visited M. Puttemans' exhibition of paintings which he has just opened, but I actually saw him at work with my own eyes, and can assure you that he does not exaggerate in his advertisement. Here is the process:—

The positive print upon paper, whatever may be its size, is in the first place rendered transparent by being immersed in a vessel containing a special preparation; it is withdrawn and attached, face downwards, upon a glass plate in such a way that it may be seen as a transparency. It is upon the back of the image that the painting takes place, so that the likeness cannot be altered, the design and modelling being both furnished by the photograph. Near at hand is a box containing a score of colours in oil, enclosed in tubes (perfectly similar to those which portrait painters employ), a palette of porcelain, a few brushes, and some bottles containing oil to dilute the colours, fixing liquid, and varnish. A little of the brownish-red colour is taken at the tip of a brush, and this is applied to the cheeks, lips, and shadows of the face. In this way several little patches are formed; then blue is applied in those places corresponding to the eyes, the outlines of the cheeks, and the half-shadows; then over the whole is applied a clear flesh tint. A tone more or less deep suffices for the hair and the beard, another tint for the coat, and another for the background. When the image is reversed after being thus coloured in a few minutes, one is quite astonished that all the tints have been so well blended, for they form quite a finished painting of some value, which, if it cannot be considered a *chef d'œuvre* in art, is certainly better than the portraits in oils which many photographers supply to the public. This is not all. When the painting is dry it is mounted upon linen, to which it is pressed or rolled in such a way that it forms one inseparable mass. Finally, it is varnished. I send you enclosed in the letter a specimen of this new method of painting, so that you may be enabled to judge for yourself of the results thus obtained. Personally, I think it is a method which will be found especially useful for the more humble or provincial photographer.

The meeting of the French Photographic Society, which was postponed until the 10th April by reason of the Easter holidays, did not furnish anything of particular interest. Nevertheless, we must mention that M. Thiel exhibited a series of photo-mechanical prints in greasy ink obtained by his photo-lithographic method, which is a modification of Albertype. The pictures were very fine, and possessed of remarkable delicacy, and bore comparison with the specimens of MM. Lomier and Jonas, who employ the Albertype process exclusively. The members present all admired the truly beautiful results, which rivalled the finest steel engravings.

The Academy of Sciences is busily occupied in making arrangements for observing the transit of Venus. In reference to this subject, M. Zenger has made known a method of enlarging photographs which he proposes to employ to amplify the pictures secured on that occasion. To obtain the image of the sun, he replaces the lenses with a mirror of long focus in such a way as to secure images of twenty-five to fifty millimetres in diameter. The spherical aberration is in this way rendered perfectly insignificant, and one need not trouble about the foens of the chemical rays. It is proposed to correct the slight deformity afterwards by successive enlargements which will attain to a scale of 2,400 diameters. In this way one will be able to render apparent the craters, crevasses, and other invisible details in the original impression.

To resume, the plan of operating proposed by M. Zenger is as follows:—1. Observation of the passage of Venus at a given point of the disk of the sun in lieu of observing



contact on the sun's limb. 2. Instead of direct observation by photography, to employ a spherical mirror of long focus to obtain images as little as possible affected by spherical aberration. 3. Finally, the enlargement of the results obtained by successive operations, so that the amplifications may be on a very large scale.

ERNEST LACAN.

### AMERICAN CORRESPONDENCE.

#### THE ADVANTAGES OF THE BETTER EDUCATION OF PHOTOGRAPHERS.

*The Advantages of the Better Education of Photographers.*—Will you take kindly a few thoughts on this subject, since the commendable spirit of "reform" is rife among you at present?

At no period of our existence has there been such a revival in the cause of science as there is at present. Old men are dying, and leaving their millions for the establishment of institutes for technical instruction, and lectures are spreading such knowledge among the people in all directions. How good this is! And may photography share in it; for if ever there was a set of men who needed technical instruction in matters pertaining to their daily avocation, photographers certainly do now. How many of them are there who know why they are able to produce the results they do? and how many of them would know exactly what to do should any important obstruction occur in their manipulations? Photography is an infant yet, and we have not begun to see what there is in it, and we never will until some means are promulgated for the technical education of its votaries.

What we want, and what you want, and what every country wants, is a first-class college or school, where photographers may be thoroughly instructed in all the technicalities of their art. We are trying to get such an institution established here, and yet some of our silly people are opposed to it. Witness an example of the arguments given vent to by such an one. A correspondent writes:—

"I am much opposed to your photographic school. We have too many artists now; too much competition, and consequent low prices; and when our college opens up the same facilities for education as law, medicine, and dentistry do, your cheap fry will indeed be cut off, but sons of wealth will come in, and in great numbers, and their competition will ruin the business. Think over it. Pause. We should rather go slow, cautiously close the doors, and let none come in until he has served his two or three years' apprenticeship."

And this from a man who a few years ago was anxious to embark as a photographer, and whom—although I have never seen him—I literally taught photography by letter, until now he is one of the best workers in the State. For shame! Shall I apply to him the suggestion of Mr. Josh. Billings, that "some people forget when they were tadpoles"?

It is not to multiply photographers that we ask for a school for technical instruction in photography; but it is for the purpose of putting more science into those who are in, or may come into, our profession. A few weeks ago, at the anniversary of the Franklin Institute in this city, Prof. Morton, in commenting upon the immense advantages of aggressive science, said:—

"Example is better than precept, as the judicious copy-book used to say to us at school, and I will therefore take a ease and give you two views, the external or artistic, and the interior or scientific, of the same scene. We are in a valley among snow-capped mountains, and before us a lake spreads its mirror to the sky. No breath of air ripples its surface; no wavelet breaks upon its beach; nothing is there but absolute repose. So says the artist; and, painting such a scene, he calls his picture 'Silence,' 'Repose,' 'The Lake of Dreams,' or some such appropriate title."

"Now, however, let us look at that same scene with eye touched

by the wand of science, and opened to see beneath the surface of things. What do we then behold? Is there any longer an impression of repose, of rest, of sleep? Look at that mass of water, with its mirror-like surface. We see there a perfect Sebastopol of flying missiles. Water-atoms hurled in clouds from the surface into the air, water-atoms hurled back from the air into the water surface. It is by such action as this, science shows us, that evaporation takes place, or the invisible though rapid passage of the liquid water into the viewless air. The whole mass of the water is likewise thrilling through with those heat motions of which, if deprived partially, it would freeze into ice, and, if robbed utterly, would shrink into some formless horror, of which even the imagination of science can form no picture."

How truly is the photography of to-day represented by the placid lake as viewed through unscientific eyes, and how appropriately a picture of its condition might be called "Silence," or "Repose," or "The Lake of Dreams"! But this need not be so. Chemistry, and physics, and all the kindred sciences which call upon photography so often for help, stand ready to help us in turn (wand in hand) to see and to understand all that there is "beneath the surface." True, we should have some trouble to impress some of the hangers-on to our art of the importance of educating themselves. Let me illustrate. Another correspondent says:—

"I have been trying to get you a new subscription or two to send with my own, but have so far failed. The fact is, our people are very mean in some things. The majority would sooner have a dime novel than the choicest work on art or science, or rather attend a negro minstrel or Black Crook performance than a scientific lecture."

Alas! the city in which our correspondent lives is not singular in the propensities which he describes. It is hard to understand why it is that men who want to make a living and more, by their daily work, are so slow to employ all the means within their power to secure the desired end. But it has always been so—for ages, at least. "Palissy the Potter" spent years of diligent experiment in trying to discover the secret of glazing and enamelling chinaware, thus wasting the labour of a lifetime "in learning what the poorest Italian potter could have told him in five minutes." But instead of seeking for information at proper sources, first he plodded along his own way. How many photographers there are like him, who might be doing much better if they would but read. In commenting upon the "modern advantages" which the artisans of the present day have, especially in the way of literature, the *Public Ledger* says:—

"The point to be made in considering the subject is this: that every man, in whatever calling, in these days of scientific investigation and the printing press, should diligently read whatever pertains to his art, profession, handicraft, or pursuit. There are not a few who grope in the dark, like Palissy the Potter. He could not help it, but the modern artisan has no excuse. \* \* \* The ready writers who keep the printing press in motion are ever on the alert for subjects for their pens, and the man who reads and keeps himself up to the current of events and developments in any branch of human knowledge may find a short cut to the end which Palissy achieved in the journey of a life. He may even learn in 'five minutes' what it has required centuries to reveal. The man who does not read is far from appreciating the force of the question once asked by a 'self-made man': 'Does one need to know anything more than the twenty-four letters in order to learn everything else one wishes?'"

In a profession like ours, growing as it does far faster than its years would seem to allow, the followers of it should read everything published pertaining to it.

That puts me in mind of "a peace of poetry" recently sent me. I have not space for it all, even did the "peace" itself convince me that the author is well acquainted with the rules of versification; but I must give a verse or two, because of the wise admonitions which they contain, no doubt from a sincere and honest heart. He is writing about the value of photographic journals, and says: Had it not been for our journals,



"Where would our art have been to-day?  
I think that you will have to say:  
Drudgery along at a fearful rate,  
In a dilapidated state.  
Let us open our pocket books,  
In the editor's eyes and look,  
We never can lose such a chance,  
*Here is the money in advance.*"

The last sentiment I like very much, and you, Mr. Editor, will endorse it.

One of the best educational means we have here is our National Photographic Association, and yet it has its opposition. For example, T. and H. say:—

"We are not members of the National Photographic Association, but hope to attend the Chicago exhibition. We perhaps are wrong in judging of the society by some of the members in our State, but their advancement of the art has so disgusted us that we have not taken the interest we undoubtedly should in it." Another says:—"There are some things about the Association we do not like."

Now, let us ask these good people if there is anything in the world that is human that they find to be just as they want it? We should look at the good the Association does, and not at the evil transactions of a few of its members; make the highest progress our standard, our objective point, and not fault-finding with our neighbours. In addressing the Franklin Institute, a few weeks ago, our old instructor and contributor, Mr. Coleman Sellers, said:—

"Trust me, the teaching of man by man in frequent intercourse is the most potent means of acquiring knowledge, and knowledge well applied is indeed a power. Say not to me that learning unfits our men for work. I tell you proper instruction is what our working people most need—what the Franklin Institute has ever tried to give them. There is in the world drudgery to be done—drudgery that needs no brain-work—but there will be through all times enough stupidity to satisfy all the wants in this direction, and intelligent labourers will make their heads save their hands to their own profit, and the benefit of the whole human family."

"A word to the wise" &c. Until soon again,—Truly yours,  
EDWARD L. WILSON.

### ON COLOURING MATTERS SUITABLE FOR TINTING FILMS.

BY JOHN SPILLER, F.C.S.\*

THE practice of resorting to the use of colouring matters for overcoming certain defects in the operations of photography has of late years assumed much importance, and served a good purpose, particularly in connection with the emulsion and dry-plate processes. Without a due recognition of the value of a pigment or "backing," the early results on dry plates were subject to the disadvantage of halation, arising from the blurring of the image on the collodion film by the secondary reflections from the posterior surface of the glass plate at the moment of its being exposed in the camera. These defects are chiefly observed when the preservatives employed are those which determine an unusual degree of transparency in the film; and with wet plates the same consequences follow the use of lightly salted collodions. For a time burnt sienna mixed with gum and glycerine was universally resorted to as a pigment for backing the plates, and correcting this tendency to abnormal reflections, but latterly this has given way to an adiacetic varnish, blackened paper, or carbon tissue at back, or a colouring matter applied sometimes to the face of the plate. Mr. Henry Cooper, Mr. R. Manners Gordon, and Colonel Stuart Wortley have worked in this direction, and advocated the system of tinting or staining the film, their experiences being recorded in the YEAR-BOOKS; Mr. Weige has likewise turned his attention to tinted transparencies; and Dr. Hermann Vogel claims to have discovered an important and hitherto unsuspected function in the possibility of rendering bromide of silver

sensitive to the so-called non-actinic rays, through the agency of aniline green and other coal-tar colours applied to the film as a supplementary wash. The whole subject is therefore one well worthy of investigation, and I need no apology for bringing the dyes themselves under your notice this evening, with such brief remarks and experiences as I am enabled to give at the present time, chiefly from a chemical point of view.

My list of colouring matters includes rosaniline and its salts, crysaniline or phosphine yellow, aurine, Hofmann's violet, iodine green, and aniline blues of different qualities, prepared by Girard's and Nicholson's processes. We have thus a range of colours diversified almost as the solar spectrum, and capable of employment either directly as tinctorial agents, or serving more recondite physical purposes in screening back certain rays which otherwise would have their influence, in ordinary daylight, during exposure. The optical quality of the colours may be accurately determined by looking through the solution with a prism or spectroscope, and the area of absorption is at once apparent for all the visible rays. The reds and yellows cut off the most active and highly refrangible rays, so that on this account they are employed by preference as antidotes in stopping halation with the dry plate process. Of these colours I now proceed to give a more detailed description.

*Rosaniline (rosine or magenta).*—The salts of this base most frequently met with in commerce are the hydrochlorate and acetate, both being freely soluble in water. When a cold aqueous solution is required, the acetate should be used. This can be procured in crystals or in the form of rosine cake—a fused mass of cantharides or brassy metallic lustre. Its tinctorial power is very considerable, so that a grain or two will redden a pint of collodion or dye an ounce skein of wool. When the hydrochlorate of rosaniline is mixed in solution with nitrate of silver, a pale pink precipitate is formed, consisting of chloride of silver in intimate combination with the rosaniline. This is very rapidly affected by light, for the organic base aids in the reduction of the silver salt, and appears to absorb the chlorine liberated. The life-sized heads shown at the last exhibition by Colonel Stuart Wortley were, no doubt, examples of tinted photographs produced by immersion of the finished prints in a weak solution of rosaniline. If their colour be deemed too strongly marked, it is easy to moderate the action by the use of a more diluted solution; but the character and effect produced may be judged from the pictures. A short notice of this and other applications of magenta appeared in the YEAR-BOOK OF PHOTOGRAPHY for 1869 (p. 38), and as one of the "Practical Suggestions," I pointed attention to the possibility of imparting a warmer colour to over-toned proofs in this manner. Mr. Henry Cooper has recently described a mode of using rosaniline in collodion which is said to be without any detrimental effect upon the bath—in consequence, doubtless, of the before-mentioned affinity for the silver iodide, if not for the pyroxyline itself.

*Crysaniline (phosphine yellow).*—This body occurs in commerce in the form of a deep orange powder, which is freely soluble in hot water. It likewise combines with chloride of silver, giving it a yellow tinge, and an aqueous solution of phosphine stains the collodion film of the same colour. Alcoholic solutions may be employed in cases where water cannot be used. Albumen is easily tinted by it, but the colour is not one that would be desired.

*Aurine* is met with in the form of a resinous cake which is quite insoluble in water, but is taken up by ammonia, forming a deep rose-coloured solution which does not dye well. It is freely soluble in warm alcohol, and by admixture with a little shellac gives a very good non-actinic varnish of permanent character. Mr. R. M. Gordon has used aurine in collodion, and reported very highly of it as an agent for preventing halation. Used as a dye upon silk the colour is a magnificent golden yellow; it has no affinity for cotton, but with certain mordants gives a bright scarlet on wool.

*Hofmann's violet (ethylated rosaniline).*—This colour may

\* Read before the South London Photographic Society.

be had in several shades, varying from the reddest violet to purple. In general properties it closely resembles rosaniline, and is freely soluble in alcohol and water, the solution staining collodion, albumen, and animal fibres. Examined by the spectroscope, it appears to be transparent to all the upper visible rays, but, nevertheless, somewhat impedes the action of light in the camera.

*Aniline green (iodine green).*—The latter name, by which it is commonly known, has been conferred upon it in consequence of its containing iodine as a necessary element. This, driven out by heat, destroys the compound, with reproduction of the original violet from which it is made by Hofmann's process. The aqueous solution cannot be boiled without injury to the colour; but a warm infusion serves to dye collodion or silk, and reference has been made to Dr. Vogel's recent experiments with this colour. It is freely soluble in alcohol, and may be obtained in splendid crystals of a dark bronze appearance. It is generally met with in the form of a dark green powder, which contains a little common salt, used in separating the colour from admixtures of violet.

*Aniline blue (phenylated rosaniline).*—"Bleu de Lyon" was first prepared by Girard, by the action of aniline upon magenta or aniline red. This body is not soluble in water, but becomes so by treatment with oil of vitriol, according to Nicholson's process. Many improvements have been introduced by which the colour is fitted for various purposes. Opal blue is used for dyeing silk of the finest shades; Nicholson blue goes well upon wool; and soluble blue is used for cotton. The first of these is, like the "bleu de Lyon," quite insoluble in water, but is taken up by warm alcohol, forming a magnificent blue solution, which cuts off all the yellow, and much of the lower portion of the spectrum. Nicholson blue is an alkaline preparation, freely soluble in water, but of minor interest for our present purposes, since it requires an acid for development. The soluble blue is prepared of several qualities, and one of this series—named China blue—has been made the subject of experiment, by Mr. William Brooks and myself, for tinting films of a bright blue colour. The aqueous solution dries to a structureless mass, which led me to try its employment as a preservative in the collodion process. My first attempts were made last summer with solutions of unknown strength; but Mr. Brooks has recently gone over the same ground in a more exact manner, using solutions containing respectively twenty and forty grains per ounce of water, and applying directly to the washed sensitized plate (bromo-iodized collodion), washing off the excess of dye in some instances, and at other times leaving it on to dry. In every case the exposure had to be very considerably prolonged, in order to get fair negatives with a gelatino-iron developer, and there was a difficulty in seeing through the plate for the purpose of watching the development. Methylated spirit afterwards removed the blue from the film; but if left in, this colour did not offer any practical obstruction in the printing. Working with three and five-grain solutions of the China blue, the diminution in sensitiveness was very marked, so that there is little prospect of being able to take advantage of this neutral blue in the preparation of dry plates, unless, indeed, a retarding influence, in special cases—as in photographing the sun—is particularly desired.

### Correspondence.

#### LIGHTING AND VENTILATING THE DARK ROOM.

DEAR SIR,—Resuming the subject of lighting the dark room, to which I devoted some attention in your columns a few months ago, it is necessary to consider the essential conditions required, and how and by what means to obtain them. I feel sure it will be acknowledged that there should not only be enough light to enable all who possess an ordinary degree of vision to be able to perform any operations required clearly and without straining the sight; but that also the quantity should be sufficient to prevent the too

frequent violent action upon the nerve of the eye, caused by sudden transitions from light to darkness, and the contrary, on entering or leaving the dark room—certain to be injurious to all, and in many cases causing incurable blindness. The light should proceed from one source, and flow in an evenly diffused sheet over that space which is required by the operator for his labour. Should there be a window at a distant part of the room, lighting that portion only, it will not be objectionable, as it can be darkened when required. The method of obtaining non-actinic light should in no wise permanently obstruct ventilation. I believe that no perfect separation of the three powers of the sunbeam can be made; therefore we must be content if we obtain a light that will remain innocuous during a reasonable space of time—say sufficient either to prepare or develop the most sensitive plate. It should be free from sudden transitions, therefore the sun must at no time be allowed to shine in at the window, even in preference to white light. Could it be obtained free from actinism, it would be better that it should be of some soft, neutral tint, avoiding all vivid colours, especially red, which irritates and inflames the nerve of the eye, even sometimes causing such a general irritation of the brain as to produce fever.

I do not know whether it has ever been taken into due consideration, but in the use of coloured light there is a point which, if overstepped, what is gained in non-actinic power is more than counterbalanced by the great loss of light incurred. The best method of lighting the dark room is by hanging a sash containing coloured glass inside an ordinary window, thus allowing both to be opened, and white light admitted when required.

Various means have been tried for the purpose of producing non-actinic light. Coloured fabric, such as silks and cotton, have been used both in the form of blinds and curtains. All are objectionable. Fabrics of any sort are liable to be torn, to become faded, stained, and dirty, and after washing, the stiffening being thus taken out, may become little better than fine sieves, through the meshes of which a large quantity of white light is allowed to pass. Curtains, from their folds being of unequal density, will be apt to throw streaks of different degrees of light upon the work in hand, and are in many other ways troublesome and not to be depended upon.

Feeling assured that the subject now under consideration is of the greatest importance to photographers, not only as regards the beauty of their work, but also for their comfort and health, I have wished to make this dissertation as comprehensive and as practical as in my power. I have with this view made some experiments with samples of various coloured glass, talc, and lantern horn, and have formed a comparative table of their properties as regards light and actinism, from which I glean the following results:

Talc may be said to be about equal to a bad specimen of common glass; its laminae being very apt to scale, and it not being capable of being coloured, it is useless. Lantern horn, being light, strong, and capable of being dyed, would, I consider, prove very useful for glazing developing boxes and those containing sensitive dry plates which have to pass through foreign custom-houses. I find, also, that the use of orange glass is a mistake; its colour is produced by a mixture of glass of antimony and red lead; it stops out a much greater portion of light than actinism, and admits heat. The colour of red glass is obtained from copper. As it deepens it possesses the above obnoxious qualities in increasing proportion. Yellow glass, the colour of which is obtained from silver, appears to be above all other the best adapted for lighting the dark room. It freely admits light, and strongly resists actinism. When more than one layer is used, the united colour is a muddled yellow, and not orange. Even three thicknesses of yellow will admit more light than one of orange glass, and, of course, stop out a far greater proportion of actinism. I should therefore consider that two layers of yellow glass of a moderate thickness, which might be supplemented by one of a light blue colour, to make the light less injurious to the eye, would prove all that could be desired. It may here be noticed that actinic rays being once obstructed, no additional medium of any colour whatever will do away with the obstruction and enable them to pass.

I do not feel it necessary to bring under examination the relative power of other colours, and leave it to your decision whether you consider the tabular list I have formed of them is of sufficient interest to be placed before your readers.—Yours truly,

JAMES MARTIN.

#### ENAMEL PHOTOGRAPHY.

DEAR SIR,—In your last issue I notice a copy of a communication from Mr. J. J. Atkinson, of Liverpool, to the American paper, *Anthony's Bulletin*, respecting enamel photographs; and I simply wish, in writing this, to enter my protest against that gentleman,



or any one else, stock dealer or otherwise, who thus coolly appropriates and makes use of for trade purposes a copy (often using my own words) of part of my enamel method, for the sale of which he was agent some four years ago.

If your extract be correct, Mr. A. sends this process apparently as the best one he has discovered, and makes not the slightest allusion to the name of the inventor. The moral conscientiousness of these sort of people must be very large.—Yours truly,

W. T. WATSON.

[The inventor of the process in question was Herr Grune or M. Tessie du Motay; we do not at this moment remember which published first. But they both patented the method of producing enamels by converting the image of silver into an image of the noble metals, such as gold, platinum, palladium, iridium, &c., either alone or in combination with each other, or of the oxides of other metals capable of vitrification when fired with a flux. Some attempts of the same kind, but less systematic, had been made in this country before by Mr. Barnes and others. Since the publication of the methods of Grune and Tessie du Motay, various modifications and improvements in formulae have been devised by different photographers, the aim and result of which have been greater excellence and certainty in result. It is probably to an improvement in formula that Mr. Watson refers as an invention. We have understood that his formula has in some hands produced very good results, and we have seen some of his enamels which were very good; but surely he is not so imprudent, whilst selling a secret method, as to identify it with any published formula.—ED.]

## Proceedings of Societies.

### PHOTOGRAPHIC SOCIETY OF LONDON.

A MEETING of this society was held on Tuesday, the 14th inst., of which a full account will appear next week.

Mr. GLAISHER stated that before taking the chair he desired to know whether it was the unanimous wish of the meeting that he should return as president under the conditions notified to the acting secretary, viz., that he and the members of council who had resigned should be returned temporarily as *the council* of the society until a new code of laws had been passed? He had resolved, when he left the chair, never to return to it again; but at the earnest solicitations of many friends, and much against his will, he had consented to do so.

On a show of hands being taken, no one voted against the return of the president and council to office.

Mr. SORWTH, M.A., F.R.S., congratulated the members on the favourable turn matters had taken.

Mr. HUGHES desired to know whether the six gentlemen elected on the council at the annual meeting did not form part of the present council, just as much as the older members of council?

Mr. GLAISHER, in reply, said that the only conditions under which he could take office again, until the new laws had been passed, were those he had stated. Although he esteemed the six gentlemen highly, he could not consent to act with them. The former council had had a slur cast upon them by the manner in which they had been treated, and by the non-election of not a single one of their nominees. Under these circumstances he could not take the chair.

Mr. Glaisher then retired, and Lord Lindsay, Mr. White, and the Secretary also gave in their resignations.

Mr. SPILLER was called to the chair, and after some further discussion the minutes were read, and subsequently confirmed.

Mr. PRITCHARD, on behalf of Mr. Bruce, read that gentleman's paper "On the Printing and Toning of Collodio-Chloride Paper," and exhibited to the members specimens of Mr. Bruce's work. After a long discussion, and a vote of thanks to Mr. Bruce, the meeting was adjourned to Tuesday, May 12th, a special meeting to be called in the interim to consider the present condition of the society.

### SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this society was held on the 9th inst., the Rev. F. F. Statham, M.A., president, in the chair. After the reading of the minutes of the previous meeting,

Mr. SPILLER read a paper "On Colouring Matters Suitable for Tinting Films," (see p. 189).

Specimens of the various colouring matters, and of the fabrics and collodion films dyed with them, were exhibited. The effect of heat upon iodine green, in changing the colour to violet, was likewise shown.

The CHAIRMAN considered that the subject was one of great importance. Referring to the experiment of Dr. Vogel, he inquired if the same effect of practically increasing the sensitiveness of the yellow rays could not be produced by the interposition of a coloured film in front of the sensitive plate?

Mr. SPILLER thought that when the colouring matter was in contact with the chemicals a different effect would be produced than when it was applied in the way indicated by the Chairman.

Mr. BROOKS had experimented with blue films. He first of all exposed a wet collodion plate to ascertain the exact time required, and he then gave exactly double of that exposure to a blue stained film, but could not develop a visible image. On attempting to clear the film with cyanide of potassium a very faint positive image appeared, and this experiment was repeated with the same result. He thought that aniline might possibly be used as a restraining agent.

Mr. SPILLER observed that cyanide had a curious effect upon a coloured film. He then showed the effect that heat had upon a sheet of paper that had been dyed with iodine green by moving a lighted match underneath it. The heat converted the green into an intensely deep violet.

Mr. FOXLEE threw out as a suggestion the use that might be made of the iodine green as a means of avoiding halation. As heat caused the green colour to be converted into violet, a film that contained a little of the iodine green would, from its colour, give freedom from halation, and after the negative was developed and finished, the application of heat would convert the green into violet, which would not interfere with the printing.

Mr. HOWARD exhibited several transparencies that had been tinted of a warm colour by means of aniline. Two pictures of a similar kind were shown, one of which had received a wash of aniline, the other being left intact. The former was rich and warm compared with the latter. Mr. Howard observed that it was easy to produce warm tones when operating upon dry plates; but what was desirable was the production of such tones upon a wet collodion plate that had been developed with iron in the usual manner.

Mr. BRIDGE spoke of the desirability of interposing the coloured films when printing.

In reply to a suggestion by Mr. BROOKS relative to the possibility of applying aniline dyes for colouring transparencies,

Mr. TAYLOR observed that complete sets of aniline colours had been prepared for this purpose. Several years ago he had purchased aniline dyes adapted for transparency painting.

Mr. HOWARD, in reply to a question, described the method he adopted for removing the backgrounds from his negatives by means of iodine. He cut a piece of blotting paper to the size required, moistened it with tincture of iodine, and then applied it carefully to the negative. This prevented the iodine from spreading. He finally applied a wash of cyanide of potassium.

In reply to a question by Mr. FOXLEE concerning the effect of aniline upon the permanence of silver prints,

Mr. SPILLER said that this had not yet been ascertained. With respect to the dye itself, it was bleached by the action of light.

The thanks of the society were awarded Mr. Spiller for his communication, and specimens of some of the aniline colours were distributed among the members.

The meeting then adjourned.

## Talk in the Studio.

IMPROVED PHOTO-LITHOGRAPHIC TRANSFERS.—Somewhat more than twelve months ago we described, in the PHOTOGRAPHIC NEWS, an improvement in photo-lithographic transfers, originated by Mr. Walter Paul, who found the substitution of albumen or gelatine gave greater crispness to fine lines. We have been not a little amused to notice the migrations of our announcement. The facts of Mr. Paul's improvement were quoted in a French journal without any allusion to the authority from whence the information was derived. The paragraph then travelled through various continental journals, and thence back to this country, the originator of the improvement having in the meantime had his nationality changed, and the discovery became that of a Frenchman. It has now reached America, and in the last number of *Anthony's Bulletin* we are informed that "M. Paul, in the *Journal Les Mondes*, describes an improvement," &c., giving details of the modification.

KING COFFEE'S UMBRELLA.—The Royal state umbrella of the King of Ashantee, brought over as a trophy from Coomassie, and presented to her Majesty the Queen, has been photographed at Windsor Castle by Mr. Adolphe Beau, of Regent



Street. As a distinguishing character of the object is in its being made of alternate squares of crimson and black velvet, the photographs have been coloured, to show this peculiarity, with proper effect.—*Telegraph*.

**STEALING PHOTOGRAPHS.**—Richard Turnbull, reported in our last as charged with stealing photographic goods from Mr. G. Taylor, was sentenced on Friday last to eighteen months with hard labour.

**A NEW TEST FOR AMMONIA.**—Almost every month our exchanges announce the discovery of some new test for the volatile alkali, whose presence, when free and in large quantities, is so readily detected by reddened litmus or by the human nose. In recording each new discovery we leave it for our readers to decide which will be in any case the most convenient for their use. The reagent employed by Moddermann is simply a solution of blue vitriol or copper sulphate. When this salt is dissolved in pure water a clear solution is the result, but the addition of a trace of ammonia causes a greenish precipitate, especially if warmed. So delicate is this reaction that ammonia may be detected in distilled water if a large quantity of the latter be employed. The precipitate is basic sulphate of copper.—*Journal of Applied Chemistry*.

**LOOK AT THE OBJECT.**—Endeavour to have the object at which the sitter is to look of the proper size, and the right distance off. A dark whole-plate photograph is as good as anything.—*Photographer's Friend*.

## To Correspondents.

**ANSWERS BY POST.**—We have often explained that it is impossible for us to answer questions of correspondents on photographic subjects by private letter. Nevertheless we are every week asked to write many such letters, and are compelled to assume the apparent discourtesy of declining. With every wish to oblige all our correspondents, it is utterly impossible to undertake other than Editorial duties on their behalf. Our time is already very fully occupied with journalistic duties, leaving us sadly too little leisure for other matters which have special claims upon us; but were we to undertake answering correspondents on photographic difficulties by post, and to undertake various commissions we are frequently requested to look after, from one to two days in every week of our time would be fully occupied in such matters alone. We hope several correspondents this week, as well as on other occasions, will accept this intimation.

**E. S. J. II.**—We have no means of knowing the precise quality of the beer which Captain Abney used in his Beer Process described in the YEAR-BOOK. It is probable it was drawn from the barrel in his cellar for home supply, and is the production of some brewery at Chatham or Rochester; or possibly it was obtained from the canteen at Chatham. It is probable that the beer was not porter, but pale ale, which in London is commonly, as you probably know, spoken of as "bitter," or "bitter beer," or "beer," although at one time, and in some circles, we believe, porter was commonly spoken of as beer. The possible adulterations might have an injurious effect, but the exceedingly minute proportions in which they would probably be present, when present at all, would reduce the risk to a minimum. Salt, as you know, is used in some processes to get rid of free nitrate, and the minute traces of chloride of silver formed would probably be at least innocent. Sulphate of iron has been employed to give increased rapidity; but its presence might be more injurious than the other possible adulterations. Irish moss, tobacco, &c., in infinitesimal quantities, would not be likely to be injurious. In trying the process, use any ale at hand.

**J. H. C.**—If you look through the YEAR-BOOK for the last few years, you will find several tests for the presence of hypo described in detail: Grune's test is a very good one. It consists in preparing a collodion plate, exciting, exposing to diffused light, developing, fixing, washing, &c., and then treating with a tannin solution of bichloride of mercury until whitened. A portion of this film moistened with water supposed to contain hypo will darken if very minute traces of hypo indeed are present. Perhaps none is better than the iodide of starch test, which you will find in the YEAR-BOOK of a few years back, described by Mr. Spiller. As we write at a distance from home, we have not the means of referring you to the precise year at hand.

**TAMMY.**—Tammy is a woollen material which may be obtained of most drapers or upholsterers. It is used chiefly for the purposes of the upholsterer.

**P. C. W. (March).**—Any cloth which is impervious to actinic light will answer for a tent. The object of using yellow calico is to get rid of white or actinic light without quite getting rid of illumination.

**ENQUIRER.**—We fear that the lighting facilities you describe are not very good. In the first place, eight feet to the eaves and eleven feet to ridge will give you an insufficient angle even to throw off water. If it can be done, make the height at eaves not more than six feet. You require no light at either end; and, with a good skylight on the north side of such a pitch as we have mentioned, you can well dispense with top-light or side-light on south side. The north skylight, if only six feet square, might serve in fine weather; but in dull weather it would, we fear, be found insufficient. You should, undoubtedly, have side-light as well as top-light on the north side. The south light might be useful in winter, but very troublesome to work in summer.

**J. P. (Canterbury).**—Thanks for sight of the cutting; the writer was clearly all abroad on the subject. In our estimation, the card portraits with landscape backgrounds were the finest ever issued. Other photographers have sent out fine work of that kind; but no one has ever made such a speciality of this class of work as Mr. Edge. The subdued, misty effect of the landscape, which gave such force to the figure, was obtained by printing upon the grey ground obtained from a light background screen in the studio, instead of a pure white ground, which was used by the firm you name. The method of double printing they adopted had been used by Mr. H. Robinson's brother many years before. A method proposed by Mr. Burgess, of printing a background on the negative with collodio-chloride, was very effective. Thanks; we shall publish the method of mounting shortly. The risk to which we referred arises from the print being mounted on the glass, and, in case of breakage of the glass, involving destruction of the print; whilst an ordinarily glazed picture is not necessarily injured if the glass break.

**A. G. W.**—Your negative arrived quite smashed. A negative should be packed in a wooden box sufficiently strong to resist the blow it may receive in stamping, and the careless usage in transit. If you send us a print from one of the negatives we can probably aid you. The defect may arise from many causes. It may be bad lighting, it may be under-exposure, it may be the fault of the chemicals, it may be insufficient development, or some other cause which, on seeing a print or negative, we can probably explain; and we shall have pleasure in helping you.

**PINS.**—We have repeatedly described the method of enamelling prints, both in the NEWS and YEAR-BOOK. It would occupy too much space to be repeated in this column. You will find it in our last YEAR-BOOK, in an article by Mr. B. J. Edwards.

**BEE-HIVE.**—As different samples of chloride of gold contain different proportions of free acid, it is impossible to say how much lime water will be required to neutralize samples generally. Add a little at a time, and test with blue litmus paper, giving a little time between each addition to allow the re-action to be completed before testing and adding more lime water.

**ARCHER CLARKE.**—The law of copyright in engraving extends through two or three Acts of Parliament, and as we write from home, and have no access to authorities, we cannot answer with certainty. In any case, you had better send us a copy of the prints and of the publication line, to enable us to judge of the probable conformity to the law. We hope very shortly to make use of the information you sent us some time ago, and will then return the documents. Thanks for sight of them.

**ONE IN TROUBLE.**—The matt silver markings of which you complain come from a variety of causes; but where plates have worked clean all day, and the stains only begin to appear towards the close, the causes must be limited, and easily traceable. In the first place, the inner frames have probably become saturated with silver solution, and are not quite clean, although you think they are. Try having extra inner-frames, dry and clean. Be sure to allow the plate to rest upon clean blotting-paper. Again, as the day gets warmer the plates dry more quickly; immerse the plate before it is so thoroughly set. Possibly, after a hard day's work your bath gets over-charged with ether, &c. Try having an extra bath.

**OXONIENSIS.**—We have tried Forrest's patent plate substitute with much success and satisfaction. 2. The best method of dealing with refractory plates which resist ordinary cleaning methods is to use putty powder, as described in our last YEAR-BOOK. It really cuts away the dirty surface, and gives a clean newly-polished surface. 3. Old collodion is very good for cleaning plates, but very unpleasant, especially to the eyes.

**D. U. T.**—Intensifying with iodine answers very well when just a little additional intensity is required. It is important not to apply the iodine solution too long, or, as you say, it turns the whole film yellow, and causes flatness. Just flow the surface for a few seconds with a weak solution, say one grain iodine, two grains iodide of potassium, and one ounce water. The colour will become olive, giving to the highest lights density. Wash off quickly. But if you wish to increase the intensity, more pyro and silver, or iron and silver according to any of the recognized formulæ will answer best.

**LEO.**—Thanks. In our next.

Several Correspondents in our next.



## The Photographic News, April 24, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### POISONS IN THE STUDIO—THE SCIENTIFIC CLUB—THE BANE OF RETOUCHING.

*Poisons in the Studio.*—One ought always to profit by experience. Photographers are well aware of the poisonous nature of most of the chemicals with which they have to deal, but any further information on the point is always acceptable. The deadly effect of cyanide of potassium is universally known, as also the fact that one of the best antidotes for it is iron, so that in the case of a patient having swallowed a dose of the fixing agent, relief may at once be secured if he will only follow up the matter by taking the developer. In this way ferrocyanide of potassium, or Prussian blue, a comparatively harmless body, is formed. Again, in the case of bichloride of mercury or corrosive sublimate, much used in some studios for intensifying, the photographer who possesses the poison has usually the antidote also: white of egg, or albumen, swallowed after a dose of corrosive sublimate has the effect of combining with the same and producing an insoluble mass. Pyrogallie acid is said to be a most violent and horrible poison, in its effects very much like other deadly organic bodies, such as aconite, strychnine, &c. Alcoholic poisoning is, unfortunately, not very rare, and its symptoms are well known by medical men; but the effect of ether upon the system is a subject which still requires study. Of the influence of bichromate of potash, in solution, upon the system, we were recently told something in the American papers, some actors who were performing the drama of "Ten Nights in a Bar Room" having swallowed some of the liquid by mistake. The stage manager employed some coloured water, tinted with bichromate of potash, to represent whiskey in one of the drinking scenes, and two actors who partook of the liquor were immediately seized with convulsions, not recovering from the baneful effects until some days after. Bichromate of potash would exert a corrosive action rather than a poisonous one upon the coats of the stomach, and it would be difficult, we think, to suggest an antidote; the best course, probably, to be pursued under the circumstances being to give an emetic and to use the stomach pump as rapidly as possible. It would be well, indeed, for photographers always to keep an emetic in a conspicuous place in their studios ready to hand, in case of any mistake, for loss of time is always dangerous in cases of poisoning; a solution of sulphate of zinc will be found a capital emetic under general circumstances.

*The Scientific Club.*—The Scientific Club appears now to have become an established fact, the number of foundation members, amounting to two hundred and fifty, having been obtained, and rooms are now being fitted up for the reception of members. For the next two hundred and fifty members the entrance fee will be two guineas, and subscription three guineas for town, and a guinea-and-a-half for country members. We see there are several members of the Photographic Society belonging to the club, and there are two, Lord Lindsay and Lord de Blaquiere, on the executive committee, so that photographers may be said to be well represented. The rooms now taken are only secured temporarily until the limits of the club can be properly estimated, but the site will be adjacent to Burlington House, and, therefore, in close proximity to the meeting rooms of most scientific societies. It is strange that scientific interests should not have been represented before in the shape of a club, for neither the grand Athenæum, nor the cosy little Savile, although much frequented by scientific men, can be called scientific clubs, as they receive their main support from votaries of literature and the arts. And this is the case also with the Savage, Whitefriars, and other social clubs.

*The Bane of Retouching.*—Says Miss Thackeray, in her charming book of "Toilers and Spinsters":—"A photograph of your friend will, to a certain point, tell you more about him in one minute than whole pages of elaborate description. You see him himself: the identity is there—the dull, worn look, or the familiar cross-grained expression, or the humorous twinkle of the eye, or the little vanities or negligences of dress which always belonged to him—they are all before you, summed up upon a little bit of card which tumbles out of his letter." The services photography renders to families and loving friends could not be more graphically summed up than we here find it. One cares little about the high class or finished character of a photograph; so long as the picture before us is a photograph of our friend—may-be of one for ever lost to us—we have nothing else to wish for. The print may be harsh, ill-toned, badly-lighted, and of an unpleasant colour; all this is nothing compared to the assurance that it was taken from life. It has often been said that at the present day we should be glad to exchange any number of marble busts or grandly painted portraits of Shakespeare for one little brown photograph of the gifted genius. How we should all study the wrinkles on his forehead, and the care-worn lines upon his cheeks! How we should try to gather something of his pathos out of his gentle eyes; or endeavour to seek a trace of humour in the lines of his mouth! We should not have blessed the art of retouching had it been much in favour in the time of good Queen Bess, and had smoothed down every line or mark upon his visage; and this photographers who are so handy with their pencil now-a-days should remember. If we have a photographic portrait before us in which the lines and expression of the face are unaltered, and the face is as it was reflected by the original into the camera, we have a more truthful representation than the most skilled artist in marble or colours can produce, and one, too, which will always find admirers to the end of time. We may endeavour to secure as truthful a reflection, and as agreeable a reflection, as we can, and strive to let none of the most minute details be wanting on our plates; but do not let us leave out or modify any natural lines, however unseemly or unpleasant they may be.

### ON PRINTING AND TONING COLLODIO-CHLORIDE PAPER.

BY GEORGE BRUCE, OF DUNSE.\*

I HAVE been invited by your courteous secretary to write a short article describing the material and means used by me in printing and toning the pictures I had the honour of sending to the society's annual exhibition last year. I had some difficulty in making up my mind to accede to Mr. Baden Pritchard's request, not because I wished to keep to myself knowledge which others might not be possessed of, but because I was under the impression that the members of the society knew as much as I did on the subject. Having, however, given a promise, I now proceed to redeem it, to the best of my ability, by writing a short paper explaining my method of printing and toning collodio-chloride paper; and I only hope that something may be said that will induce the members of our profession to take a deeper interest in a process which, somehow or other, in this country, the place of its birth, has never gained that practical footing it so well deserves.

Before detailing my plan of working, permit me to express my ideas upon the subject of artistic tone, in its wider sense, as representing not only colour or tint in the photograph, but as embracing richness, depth, and delicacy of gradation in the negative also. And here I may say, in regard to tone or tint, in the usual acceptation of the term, I expected, in the event of any notice being taken of the photographs which I sent to London, that objections would be raised to their tone, as being too

\* Read before the Photographic Society of London.



cold or black. The reason I had for expecting this adverse criticism was, that the majority of photographers with whom I have spoken on the subject consider brown tones the most suitable for photographic prints; and, further, the work produced and sent out by the profession generally indicates a leaning to what are popularly called "warm tones."

Under these circumstances, I was agreeably surprised to find that my pictures were favourably mentioned on account of their colour. My own feelings for some years have been in favour of black colours, as better fitted to display the delicacy of gradation found in a negative; and consequently I have done everything I could to produce in my work the purple black, as well as the transparency of a first-class engraving, being convinced that the nearer I attained to these two qualities the more artistic would be my pictures.

My predilection in favour of this tone rests upon the fact, in the first place, that the artistic world, both in the past and present century, have adopted a blue-black ink upon a white ground as the most effective and pleasing tint for pictures in monochrome. They were perfectly well aware (as we are ourselves) that neither a brown nor a black ink could represent colour as seen in a painting; but between the two they chose the latter as the best medium through which to show the wonderful power of the artist engraver in rendering the semi-transparency of flesh and texture of fabric by the skilful use of light and shade alone.

The second reason I give for preferring a black to a brown tone is, that I believe the delicate shadows which lie just beneath the highest lights of the picture receive more beauty and value when the photograph is toned deeply than if the toning had been stopped at an earlier stage. The gamut or scale of gradation at our command is more limited than that of the painter, and we require, therefore, to husband our resources all the more carefully, so as to make each degree of gradation tell in our finished work; and if we can extend—or, at least, make more visible—these gradations by toning past the brown to a rich black, then by all means let us do so, as the essential spirit of a photograph lies in its pearly half-tones.

As we listen to such a man as Signor Foli, in his song of "The Diver," we are conscious of a feeling of wonder and awe as the artist carries us down with him into the "waste of waters." Again, when Mdlle. Titjens renders, with all the force of her magnificent voice, one of those airs in which the composer lends brilliancy and weird-like power to the composition by using the higher notes of the scale, our ear, while entranced and thrilled with the music, feels sometimes strained and excited with the pitch; but let the same lady sing the simple "Home, Sweet Home," with its gentle undulating tones falling sweetly on the ear, and our hearts are at once touched by the more soothing and natural melody.

So is it in looking upon beautiful paintings, engravings, or photographs. Without the middle tints we may have a bold, clear, glaring picture, with its startling effects of strong contrast, but of which the eye soon grows weary, though it may have been arrested for a moment; while, with the addition of a cool grey tone, filling up the picture between the highest lights and deepest shadows, modelling and transparency are at once imparted to the whole, and a picture full of tenderness and beauty is the result. While our foremost men are aiming in their portraiture to produce the breadth of light and shade seen in the works of great painters, and while in many instances they succeed, yet in my opinion (and I give it for what it is worth) a large proportion of the so-called "Rembrandt portraits" are complete failures for want of gradation or middle tone. It behoves us, therefore, in seeking after higher and broader effects in our work, never to omit the half-tone, as otherwise heavy, lifeless portraits, with hard, staring faces, will be the outcome and conclusion of the whole matter.

Sir David Wilkie, the great painter (a study of whose engraved works is perhaps more fitted to elevate our efforts than those of any other artist, living or dead), was a master in the art of chiaroscuro, as witness his "Clubbists," in which we have a breadth and fulness of light and shade delightful to look upon.

The depth, brilliancy, and richness of this picture are not dependent on chalky high lights or black shadows, but upon the undulating gradations from dark to light, and from light to dark, which play so wonderfully over the figures and across the walls of the club-room. Detail and subtle gradation are found in every part, binding the masses of light and shade together, and giving to the picture a unity of purpose which it would not otherwise have.

The cultivation of this taste for combining the delicate with the deep, and high lights with half-tone, ought to be the aim of all photographers, as the forward movement of our art depends so much upon it; and just in proportion as the members of our profession exercise this faculty, by using the legitimate means at their disposal for giving gradation and modelling to their pictures, so will their work rise to a higher level, and claim a larger meed of praise from those men whose opinions are worth having.

No doubt we are "cribbed, cabined, and confined" in the production of art pictures by the unbending nature of the materials from which we make them; but then there is a hope that in the future—and, perhaps, at no great distance—some one will give us a developer so rapid in its action that those phases of expression we so long to get impressed upon our plates, and which, if once there, would give so much artistic value to our work, will become a possibility.

I would not forget that through the kindness of Mr. Faulkner the profession has now within its reach the invaluable power of giving breadth of effect and artistic gradation to the background of their pictures, and that without excessive labour; and although it is to be regretted that so few have as yet availed themselves of this great privilege, I cannot but believe that the profession generally will, ere long, come to look upon this method as a great help to securing beautiful pictures.

I may say here, with regard to my photograph "188," of which "the judges" expressed approval in their published report, that in my opinion the artistic merit, and what was termed "its perfect illusion," is, in a great measure, due to the use of one of Mr. Faulkner's graduated backgrounds.

When imitating the qualities of a fine engraving, we must not trust to toning-baths alone, but do what the engraver does—put the tone into our plates, not by aid of lead pencils, but with pencils of light direct from Sol himself; and assuredly, if an intelligent mind guides and controls these rays of light in the same way or sense as the engraver guides his graving-tools, all other things being equal, results will be obtained—in their technical qualities, at least—fit to be compared with the finest engraving extant. No remodelling of the negative, in the sense that many photographers mean it to be understood, if we are to judge by their work, can ever give that rich tone so peculiar to a well-lighted and carefully developed plate, even though the pencil be under the guidance of a Fritz Luckhardt.

A number of photographers who write in favour of retouching (or remodelling, as it is sometimes called) assume that artistic feeling and truthful representation must always be added to the picture after, and not before, the plate is taken!

Now I, for one, demur to this view of the case, and do not hesitate to say that this theory is damaging to the person who holds it, as well as to the profession of which he is a member. I do not think I am alone in believing that, unless artistic feeling and truthful representation be impressed upon the *subject* before the negative is taken, the



most elaborate retouching afterwards will not supply the want. I quite agree with Mr. Blanchard and others, that retouching is legitimate in the way of correcting any slight mistake when it occurs; but I am more and more convinced that the best negatives made are those which require the least work to make them ready for printing. And if this holds true in regard to particular plates, why should we not devote more time and greater skill to make all our negatives so perfect that little or no correction shall be needed to make them produce truthful and pleasing pictures? By doing so, character will be retained, the friends of the sitters will be better pleased (although the sitters themselves may not), and, not the least important, our art will be more respected and trusted in the future than it is likely to be if this frenzy for remodelling continues.

I would sooner have the photograph of a dear friend taken by the merest tyro in the art, than have one with all the character rubbed out, even though it should be pronounced a "pretty picture."

To secure this artistic softness in our plates, which is so much and so justly sought after, we must give them a very full exposure, so as to get out the minutest gradations both in the dark and light parts of the picture, leaving no more clean glass than is just needed to give depth and value to all the rest of the gradations above.

The negative must, through skill in lighting, timing the exposure, and developing the plate, be filled with tone, before we can get that delicious suggestion of flesh-tints in our portraits, and atmosphere in our landscapes, which pervades and fills to such a wonderful degree the works of eminent engravers.

I believe I am correct when I say that, however much we may differ regarding what should be the tint of our photographs when finished (a point on which difference of opinion may be held without materially affecting the intrinsic value of our work), most of us are at least agreed on this: that no tone or tint, however rich, will make up for a bad negative; further, that delicacy and technical perfection in the negative will not atone for the want of that knowledge and refined taste which grasps the idea and arranges the subject so as to make the best picture that can be secured out of the material we may have at our disposal.

(To be continued.)

## EFFECTS OF SUNLIGHT ON THE COLOURS OF PIGMENTS.

BY R. H. BOW, C.E., F.R.S.E.\*

With the three permanent colours—black, burnt sienna, and ultramarine—a most extensive and beautiful suite of transparent colours may be produced, ranging from the coolest neutral to the warmest ruddy brown, and with intermediate passages of grey, green, and blue character.

*Cappah Brown.*—So far as the sheet B can show, this colour is more permanent than vandyke. The exposure has not been long enough to speak of its absolute character as to permanency.

*Brown pink.*—Sheet A shows how decidedly fugitive this is. So far as sheet B goes it pronounces it more changeable than vandyke.

*Sepia.*—Sheet C shows this as decidedly bleached as vandyke brown.

*Bistre.*—On sheet C this is considerably bleached, and changed to a colder tone.

*Ferrocyanide of copper.*—On sheets B and C no decided change is observable.

*Brown*, formed by adding ammonia to pyrogallie acid.—The action of the light upon this is peculiar; it greatly increases the depth of the colour, at the same time changing it to a cooler character.

*Chromate of silver.*—This, which has an original colour like a darker and purpler Indian red, has, on sheet B, been changed to a warm brown. On sheet C the change has

gone very far, and even the obscured part has not been sufficiently protected; the exposed parts are bronzed and iridescent, like a much over-exposed ordinary photographic silver print.

*Chromate of mercury.*—This, which is originally like light red, has become on sheet B a dark, cool brown, and indeed, where the layer is thin, it is almost reduced to a neutral tint. In sheet C there is a change of colour without so great a darkening.

*Vermilion.*—This, as is well known, darkens in the sun. In sheet A it has assumed a dusky hue; in sheet B the change so far is rather one of tint than depth of colour, the changed colour partaking more of a brick-red character. In sheet C the change is as yet very slight.

*Rose madder.*—It is very satisfactory to find that this is particularly stable in oil colours, as shown by sheets A and B.

*Purple madder.*—This rather expensive colour, shown on sheet B, has faded very considerably. Whether or not some of the colours are genuine is, however, left in much doubt, as I understand it is too common a practice to adulterate the rarer ones. Judging from the rose madder, and from the character acquired by Turkey red, we should expect the madder colours to resist the sun.

*Crimson lake.*—This bleaches very rapidly.

*Carmine.*—Also very fugitive in the sun.

*Brazil wood.*—On sheet C a strip is painted with a red ink, believed to be made from this. It has become darker and more crimson in colour where exposed to the sun.

*Aniline colours.*—These are, unfortunately, very fugitive in the sun, as shown by Nos. 24, 28, and 34 on sheet C. Indeed, as a curiosity, a photographic print might be produced by exposing under a hard transparency a piece of paper stained with these colours.

*Indian yellow.*—This beautiful transparent colour, so useful in glazing, is, unfortunately, not permanent. On sheet A it soon lost its fine qualities, and finally became much weakened and reduced to a dirty greenish-yellow. In sheet B, though the change has begun, it is not yet very striking, and very little effect has been produced upon it used as a water colour on sheet C.

*Cadmium orange.*—This is very similar to Indian yellow. That purchased as a tube oil colour is considerably redder, but the pure sulphuret is somewhat yellower. No very perceptible change is yet produced on sheet B; but on sheet C the colour has become dirtied and impaired more than the Indian yellow on the same sheet.

*Aurcolin.*—So far as tested by sheet B, this appears to maintain its colour, which is very like that of the pure cadmium orange. There is a suspicion of darkening.

*Chromate of strontia.*—This, on sheet B, has lost somewhat of its brilliant lemon-yellow colour; on sheet C it has assumed a dirty-green hue.

*Chromate of baryta.*—This, on sheet B, has become more changed than the strontian yellow, but on sheet C the change is slight.

*Chrome yellow and orange* become darkened in the sun, and that, to a certain extent, very rapidly; but I suspect that they, like some other pigments, recover to some extent their proper colours when removed into the shade. On the extra sheet D are shown two strips—one of the pure yellow powder, the other the same fixed with British gum. An exposure for only five minutes in the sunshine caused a perceptible darkening, but most marked in the case of the mixture with gum; further exposure has not much increased the discolouration of the pure chrome, but the gummed strip has gone on darkening. In the old sheet A the change is very great. In sheet B the fine yellow colour is dirtied. In sheet C the change is not quite so striking, and on it the orange-coloured chrome is more darkened than in the yellow variety.

*Naples yellow*, on sheet B, is somewhat darkened.

*Gamboge*, on sheet C, is somewhat bleached.

*Oxide of uranium.*—This, though a good yellow at first,

\* Continued from page 184.



is here given merely as a curiosity, as it is so very greatly affected by the light, becoming, after no very lengthened exposure, a dark, greenish grey on sheet C, and nearly black in sheet B. Examined after exposure for three days, it was found to be very considerably darkened.

*Prussian green.*—This, as on sheet C, has lost in depth and become blue.

*Sap green* is not stable; the changes on the tincture will be afterwards spoken of. The strip on sheet C does not show much change, but the specimen was not very satisfactory.

*Oxide of nickel*, as an oil colour on sheet B, is unaffected as yet.

*Emerald green.*—On B and C no decided change as yet.

*Prussian blue.*—This, as an oil colour, appears to resist the action of the sun very perfectly, as shown by the much-exposed sheet A, and the later experiments on B, where it is given pure, and also mixed with white lead. This is a very satisfactory result; but, as a water colour, it is not to be trusted. Sheet C shows a bleaching effect at work.

*Antwerp blue.*—This, as a water colour, on sheet C, faded very soon.

*Indigo*, as an oil colour, faded less than expected. It became of a pinker character. It fades much more rapidly as a water colour.

The colours tried, but previously known to be permanent, were burnt and raw siennas, bright red, yellow ochre, terre vert, cobalt blue, and ultramarine.

The pigments which, used as oil colours, appear from the experiments to be characterised by more or less perfect indifference to sunlight are ferrocyanide of copper, Prussian blue, emerald green, rose madder, pure cadmium orange (?), aureolin (?), oxide of nickel.

In experiments with oil colours, it should be borne in mind that the yellowness of the medium becomes bleached in the exposed parts of the bands. This may cause an apparent change which is not due to the pigment mixed with it; thus, in the case of rose madder, the colour is rendered a more perfect pink in the exposed part from the whitening of the medium. The medium recovers slowly its yellowness in the shade.

I have now to speak of that brilliant but most treacherous of all colours—the biniodide of mercury, or “pure scarlet” of the shops. The experiments with it will serve to show what great influence the medium used has upon its permanency.

When the binionide is formed by precipitation—as by pouring a solution of iodide into one of corrosive sublimate—a lemon-yellow cloud is formed, which rapidly changes colour, running through orange, salmon colour, &c., and more slowly changing to the brilliant scarlet. When this is used as a paint under a considerable variety of conditions, there is a great tendency for it to revert to the yellow condition, and that preparatory to its complete disappearance. Since it is by far the most perfect of scarlet pigments, it is most important that its characteristics as to permanency should be studied. It has happened that naturalists have been induced to use it to depict, among other subjects, the beautiful colouring of tropical flowers; but, alas! when the painting was to be referred to in after years, the colour had either altogether disappeared, or degenerated into scattered yellow and red spots and streaks. I believe, however, that I have been fortunate enough to stumble upon a treatment which will confer upon it a certain degree of permanence.

The biniodide is liable to two changes—the one becoming yellow, the other darkening in the sun. And, first, concerning the tendency to darken. When the simple powder is exposed for a few seconds to the sun, or even diffused daylight, a very perceptible darkening is produced, and when British gum is used as the medium, this change is still more decided, as seen on sheet D\*; but when *gum arabic* is used so

abundantly as to give a high gloss to the surface, no decided change is produced, even after lengthy exposure, as shown by sheet C. Oil mediums and varnishes do not prevent this darkening. On sheet A it assumed the colour of Indian red, a dark powder appearing to be thrown out, which a wetted cloth readily removed, showing the biniodide beneath it even paler than originally; but the spot so cleaned became even darker than before on re-exposure. This darkening, however, begins to disappear when the sheet is removed to the shade. It may be that the darkened particles tend to become yellow. In sheet B the behaviour is more capricious; the exposed parts are sometimes darker and sometimes lighter than the obscured part. This, I believe, arises from both changes to darkness and to yellowness going on at the same time, but in irregular degrees. I must, however, at present leave the matter in a very obscure state.

The supplementary sheet E, painted some years ago, will show the tendency to turn yellow or disappear altogether. The first strip, painted with the pure powder in water, has nearly all vanished, a few yellow streaks and some minute red spots only being left. The second strip had flour paste as the medium, and its condition is very little, if at all, better. The fourth strip was painted with the biniodide mixed with varnish: a yellow and red cloudiness is all that we now see. The fifth strip had magi for the medium: this is reduced to a faint yellow with some red streaks through it. But the third strip, for which the medium was a thick solution of gum arabic, retains very much of its original body and brilliancy. The sixth strip was painted at a later date, and gives a different result from the fifth for magi as the medium; it as yet shows no loss of body.

Gum arabic appears, then, when liberally used, to have the power of preventing both the darkening by the sunshine and the yellowing from molecular changes.

I shall conclude by exhibiting two instances of change of colour in liquids caused by the sunlight. Here are two bottles containing tincture of green leaves, the colouring matter being chlorophyll, which has such interesting optical properties. The two bottles were filled from the same stock, but one of them has lain for about two hours in the sunshine, and you see the colour has been degraded from the beautiful and somewhat blue green to a sort of brown yellow, having only the faintest trace of green in it. The other example is an old registering minimum spirit thermometer. This was used for some years as a garden thermometer, and you may observe the liquid, which originally possessed a fine pink colour, has become bleached to a faint dirty yellow, and very unsuited for its purpose. I also place on the table a small spirit level which I filled a number of years ago; but the coloured liquid in it is as clear as when put in, and the colour is perfectly permanent. I would strongly recommend the adoption of this liquid, which is a tincture of iodine, for spirit thermometers and other similar purposes.

## SPECTRUM ANALYSIS AND PHOTOGRAPHY.

BY J. NORMAN LOCKYER, F.R.S.\*

THE next step brings us down to the year 1852. In this year a paper was communicated to the Royal Society by Professor Stokes, who had already announced his discovery of what has since been called fluorescence, “or the long spectrum of the electric light.” Professor Stokes dealt in his first paper with the “change of refrangibility,” or, as Sir William Thomson proposed to call it, “degradation of light,” by virtue of which light, which was generally invisible to us, could, under certain circumstances, be made visible. It is no part of my present purpose to go into this magnificent paper, one of the crowning glories of the work of this century, at any great length; but you will see in a moment that if it was a question of the degradation of light, then the invisible light to which Professor Stokes referred as being capable of being rendered visible must have been light outside the blue

\* After a few days the changing to yellow becomes so decided as to do away with the darkening by the sunshine; but this yellowing is not decidedly shown in the shaded part of the strips of colour.

\* Continued from page 185.

† *Philosophical Transactions*, vol. clix., 1852



end of the spectrum, and not outside the red end. Professor Stokes, in his investigations, in order to get at this invisible light under better conditions if possible than those with which he commenced operations, tested the transparency of the substance through which the light with which he experimented passed, and the transparency of glass was passed under review by him,\* when he found that this invisible light, or whatever it was, could only get through glass with extreme difficulty. Continuing his investigations, he found that quartz, on the other hand, allowed this invisible light to pass. If you will allow me, I will read an extract from Professor Stokes's paper of the extreme importance to our subject. After referring to these experiments on glass and quartz, he proceeds to say:†—"I have little doubt that the solar spectrum" (which you recollect had already been photographed to a certain extent both by Becquerel and Draper beyond the visible blue end of the spectrum), would be prolonged, though to what extent I am unable to say, by using a complete optical train, in every member of which glass was replaced by quartz." He then adds that other substances which suggested themselves to him were not equally good; then, further, that if this invisible light does get through quartz, and does become visible to the eye, it does not at all follow that it will be capable of being photographed, because already Professor Stokes, in order to continue his researches in fluorescence, had been, as it were, driven to photograph some of the results which he had thus obtained. I am sorry to say that, so far as I can find out, none of those photographs have ever been published.

Before I go further, I think it will be convenient to throw on the screen some photographs of the solar spectrum, showing exactly what I mean by the "invisible rays;" and you will then see the enormous advance which Professor Stokes made the moment he introduced his quartz train, and enabled both the eye and the photographer to take advantage of a new region of the spectrum in its entirety, in order to investigate it. In a note to his paper communicated to the Royal Society, he shows that his anticipation, so far as the eye was concerned, was perfectly justified by the facts.‡ He says:—"I have since ordered a complete train of quartz, of which a considerable portion, comprising, among other things, two very fine prisms, has been already executed for me by Mr. Daker; with these I have seen the lines of the solar spectrum to a distance beyond H," more than double that of P, so that the length of the spectrum, reckoned from H (the outside line in the portion ordinarily visible), was more than double the length of the part previously known from photographic impressions. I will now throw on the screen the spectrum of the extreme part of the visible portion. The eye generally can see the two dark bands which you see in the middle of the screen, called H 1 and H 2. The least refrangible part of the spectrum lies to the right. When Professor Stokes, therefore, stated that the solar spectrum was prolonged, he means that the part of the spectrum visible either to the unassisted eye or on a photographic plate after impression, extends to a certain distance beyond these two dark lines. Another photograph I have here will show this better. In this we get a little more of the structure of the spectrum beyond H. We have still the less refrangible portion to the right. This is a negative, and therefore what we have as dark lines in the proper representation of the solar spectrum are seen as bright lines; we have to the left of H 1 and H 2 more of the structure than we had before; just about so much of the spectrum, in fact, as was photographed by Draper and Becquerel in 1812. The part which Professor Stokes rendered visible by means of his quartz train extended a considerable distance to the left beyond the part of the spectrum which you now see on the screen.

So much for the solar spectrum. Now let me carry you on another ten years, to the year 1862. Professor Stokes, in a paper communicated to the Royal Society in this year,§ refers to his former paper, and to what he had been enabled to do by means of it. He states: "A map of the new lines (the lines thus observed by him) was exhibited at an evening lecture before the British Association, at their meeting at Belfast in the autumn of the same year, and I then stated that I conceived we had obtained evidence that the limit of the solar spectrum in the more refrangible direction had been reached. In fact, the very same arrangement which revealed, by means of fluorescence, the existence of what were evidently rays of higher refrangibility coming from the electric spark, failed to show anything of the kind when applied to the solar spectrum;" and then he goes on to say that, in making

observations by means of the electric spark, he had found that in the case of a spark taken between the poles of an induction coil like this on the table, or between the poles of an electric lamp such as you see here, that the visible spectrum which was revealed and rendered visible to him by means of fluorescence was no less than six or eight times longer than the whole of the visible part of the spectrum. That, you see, was a revelation of the first order. He was so astonished at this, that he at first thought there was some mistake: "I could not help at first suspecting that it was a mistake, arising from the reflection of stray light." In fact, so astonished was he, so many methods did he try in order to break down the impossibility, if it existed, that he adds, in a subsequent part of the paper, "I tried different methods, without being able to satisfy myself as to the accuracy of the observations, and frequently thought of resorting to photography."

Professor Stokes thought of resorting to photography, but at the moment that Professor Stokes was thinking of this, Dr. Miller, of King's College (unknown to Professor Stokes), was not only thinking of resorting to photography, but had actually resorted to it, and was taking photographs of the so-called invisible part of the spectrum, in which the spectrum in the case of some substances was five or six times, and in the case of silver one might say almost seven times, as long as the spectrum ordinarily visible through glass prisms. Professor Miller goes very nearly over the same ground that Professor Stokes had done before him. He also investigates the transparency of quartz, and comes to the conclusion that quartz is almost the only substance that can be employed. Professor Miller, in this paper, which you will find in the "Philosophical Transactions,"\* also gives for the first time a detailed account of the way in which such work is done. Permit me to give you a rough notion of this method of work. We have here a spark from an inductive coil, exactly such a spark as Dr. Miller wished to examine. He had a spectroscope something like this on the table, with two important differences. The first important difference was, that instead of having two glass prisms, he had prisms of quartz; and again, instead of having an observing telescope adapted for use by the eye, he inserted a camera, or what was to all intents and purposes a camera, in the same place. So that he had, first of all, a light source by which you get an intense illumination, due to the extremely high temperature of the spark. Then you have a quartz lens and quartz prisms, and then simply the photographic plate. Having, therefore, an entire absence of the non-transparency of glass, Professor Miller was delighted to find that, on taking this spark in this way, between electrodes of different substances, he not only photographed what could be seen—namely, a spectrum ranging from red to blue—but one extending, as a rule, six times the length of the visible spectrum beyond the blue; although, in some cases, it is true, it is only four times as long on the more refrangible side of H as H is from the red end of the spectrum—that is to say, the line which is generally called A. In this paper of Dr. Miller's we have the germ of all the applications of photography to spectroscopic inquiry which have been carried on since; and I am sorry to say that altogether too little has been carried on. Not only did Dr. Miller investigate in this way the radiation of different vapours, and give photographs for the first time of the bright lines of a very large number of chemical substances, but he went further than this altogether, and dealt with the absorption of different substances. He commences his paper with the absorption of chemical rays by transmission through different media—through solids (transparent, of course), through liquids, and through gases and vapours, the only alteration he made in his general mode of experimentation being that in the case of the absorption of gases and vapours, he placed the instrument further from the light source, and in the path of the ray inserted a tube containing the gas or vapour to be experimented with, as I am doing now, so that the light which passed from the spark to the telescope was compelled to traverse a thickness of vapour according to the length of the tube employed. In that way he not only determined the absorption of equal lengths of different vapours amongst themselves, but the absorption of different lengths of the same vapours; his paper is thus one of the most important contributions to spectroscopic knowledge that I am acquainted with, and I hold that the chief importance of it is the application of photography to spectroscopic observation. There is nothing so difficult, I think, as to make a proper spectroscopic observation, and from the little experience I have had with it at present, I should think there is nothing more easy than to make what I may call passable spectroscopic photographs. That, then, was in the year 1862.

(To be continued.)

\* Op. cit. Art. 202.

† Art. 204.

‡ P. 599.

§ "On the Long Spectrum of the Electric Light." *Phil. Trans.*, vol 152, p. 599.

\* Vol. cit. p. 801.



# The Photographic News.

Vol. XVIII. No. 816.—APRIL 24, 1874.

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## COMPETITION FOR LANDSCAPES.—FURTHER PRIZES BY MR. CRAWSHAY.

WE have pleasure in announcing that Mr. Crawshaw, of Cyfarthfa Castle, to whose munificence photography has already been indebted for considerable impulse in the production of large direct portraits, has resolved to add to the prizes already offered for large portraiture, a series of prizes for landscape pictures, the competition to take place some time in autumn at the same time as the portrait competition. A prize of £25 will be offered for the best three landscapes of any size not less than ten inches by eight, and a second prize of £12 for the second best three of similar proportions; also a prize of £10 for the best landscape of any size, and a prize of £5 for the second best landscape of any size. The precise arrangements will be duly published in our next; but at present we may remark that no conditions of a troublesomely restrictive character will obtain. Mr. Crawshaw is desirous that each landscape shall be a genuine view of the scene it professes to represent, and not a patchwork of many places. But he does not bar such combination as may be desirable to secure either higher truth or pictorial effect. If the subject be one in which justice cannot be secured by the use of one negative, several negatives may be employed, so that portions of foreground, figures, clouds, &c., may be produced on separate negatives, and secured in the picture by combination printing. The competition will be open to photographers in all parts of the world; and as the wide conditions give facilities for almost every landscape photographer to compete, we hope that a goodly number will enter the lists. The size of the competing pictures for the first prize is within the power of most photographers, whilst for the next no size is laid down. Supreme excellence alone will take the prize. Fuller details will appear in our next, and the precise time and place of the competition will be duly announced when decided.

## AWARD OF MR. E. ANTHONY'S PRIZES.

IN the course of last year, our readers may remember, Mr. E. Anthony, of New York, offered a series of five prizes, of one hundred dollars each, for the best whole plate photo in five different styles. There was a certain charm in the simplicity of the demands which was likely to draw many competitors. None of the subjects for competition demanded extraordinary appliances or the expenditure of effort of a kind out of the groove of ordinary business. The first prize was for a bust of a lady; the next the head of a boy under six; the third the head of a girl under six; the next a group of two children under six; and the last the best

landscape,—none of the pictures, as we have said, exceeding whole plate size. All the subjects were, therefore, within the scope and means of every photographer, and the competing pictures might, in many cases, be selected from those taken in the course of business. Over a hundred competing pictures from all parts of the world were sent in—England, New Zealand, Bavaria, and other places, as well as the United States, furnishing competitors. Curiously enough, in the large competition evoked, many contributions were necessarily excluded for contravening the conditions, by being larger than the prescribed size. Three jurors, Messrs. J. W. Draper, H. J. Newton, and F. F. Thompson, met in New York, and reported as follows:—

"1. For the best bust picture of a lady, to J. Barhydt, of Rochester; the photograph marked lady, No. 3.

"2. For the best child's head (boy), less than six years old, to F. Gutekunst, Philadelphia, the photograph marked little boy, No. 1.

"3. For the best child's head (girl), less than six years old, to F. Gutekunst, Philadelphia, the photograph marked little girl, No. 1.

"4. For the best group of two children under six. The pictures presented under this head were all indifferent, and the jurors do not award any prize, unless the terms of the competition require them to do so. In that case they give the preference to the photograph marked Nellie and Eddie, by L. J. Bigelow, with John F. Nee, Williamsport, Pa.

"5. For the best landscape, to Alexander Henderson, of Montreal, his motto being 'Lux fecit,' and the photograph marked 'the A. House.'

"The Jurors further state, that with regret they were constrained to exclude from the competition, because of their size being very much larger than the prescribed 4-4, the very fine landscapes sent by B. Johannes, Partenkirchen, Bavaria. These are excellent both for tone and effect, and are worthy of the highest commendation.

"Several portraits of gentlemen were also excluded, there being on the prize-offer no provision for them."

Mr. E. Borda and Mr. Coleman Sellers met in Philadelphia, and, in sending in an independent report, agree with the preceding report as to the bust of the lady and the two portraits of children; but awarded the group to M. Boissonnas, of Geneva, Switzerland. In regard to the landscape, they agree with the New York jurors.

Mr. J. P. Cook, of Harvard College, in an independent report, agreed with the preceding as to the portrait of a lady; but gave his verdict in relation to the portraits of a boy and a girl to contribution by Mr. Abel Lewis, of Douglas, Isle of Man. He also gave his verdict for M. Boissonnas in regard to the group, and for landscapes to Johannes, of Bavaria.

A final decision in favour of M. Boissonnas was given by a painter and member of the Academy of Design, Mr. G. A. Baker, to whose decision the matter was referred on the subject in the absence of agreement amongst the jurors.

## THE PHOTOGRAPHIC SOCIETY OF LONDON.

THE Photographic Society of London appears to be once more in a state of disruption and confusion, and—although, so far as we can see, with less cause—we fear that the prospect of harmony is more irretrievably remote than ever. We can readily understand how puzzling to non-resident members must be the glimpse of the matter they obtain from published reports. Being personally unable to be present at the last meeting, and reading the reports at a distance far removed from the atmosphere of strife, we can feel, to some extent, the difficulty which must be experienced by the mass of the members of the society in appreciating or entering into the spirit of the struggle by which a small section, chiefly amongst the resident members, has perilled the prosperity, possibly the existence, of the whole society. In our absence, we engaged a shorthand writer, connected with the London press, to furnish us with a full report, free from bias or tincture of partizanship. This report we publish this



week, to supplement the brief notice in our last. We feel it impossible to glean from the detailed account any legitimate or adequate reason for the renewed disruption; but there unquestionably seems to have been an unnecessarily exigent spirit on both sides, Montagnes and Capulets. "Do you bite your thumb at us, sir?" on the one hand; and "I bite my thumb, sir," on the other.

Let us glance for a moment at the facts. After a brief, but bitter, agitation, the origin and character of which it is neither necessary nor pleasant to recall, a meeting was held last month at which an honest spirit of conciliation and harmony prevailed, and a resolution was passed inviting the president and members of council, who had resigned at a former meeting, to resume their offices. These gentlemen, having met, agreed to accept the invitation, for such brief time as might be necessary to conduct the business of the society until a new code of rules was in force, an event which it was hoped would not require more than two or three months, at most. They would then resign their offices, in order that a general election might take place under the suffrages of every member of the society, non-resident as well as resident; recognition of the voting rights of country members being the corner-stone of any new laws which the council were willing to promote or sanction.

A series of doubts and difficulties arose, however, in the minds of different members of the council, as to the legality, on various grounds, of the proceedings following the resignation of the council. It was held by some that an annual meeting for the transaction of business was dissolved when the president left the chair. The rules provide that in the absence of the president, one of the vice-presidents or one of the council shall preside. In this case, all officers having resigned, a non-official member present in the meeting took the chair; and, as we have said, it was held by some that the business meeting was *ipso facto* closed when the president left the chair, and all business proceedings, including the election of six officers, afterwards transacted at such meeting, illegal. It was further held by others that the entire spirit of the vote by ballot was violated by the election of six officers by a score and a-half of members pledged openly to vote for them, and doing so at a meeting when all, or nearly all, opposed to them in view had retired. It is probable that some idea of the illegality or unfitness in some form of the manner of their election was felt by these gentlemen and their friends, as they resigned office at the next meeting. It will naturally be answered that having done this, and been re-elected, any illegality in their election at the former meeting was disposed of. But another difficulty arose. The election of officers must, according to the rules, be by ballot, and in the re-election of these six gentlemen no ballot was taken, but a simple show of hands. Again, it may be urged that it was in precisely the same manner that the late council were invited back to their offices. But there is just this important difference: that in their case there was no re-election, and therefore no breach of rule. They were invited to "resume" office, and this they expressed their willingness to do by withdrawing their resignations, not by being re-elected.

These and some other similar arguments may be valid, or they may not, and it is unimportant now to discuss them, as a decision either way cannot undo what has been done. We simply state them to explain the course of events. In the midst of the difficulties, and with a strong indisposition to return to office at all, the council yielded to a desire to serve the society, by consenting to resume temporarily their duties, without the co-operation of the gentlemen whose legal status was doubtful. Whether they would continue those duties alone, or by the aid of other members elected in accordance with an existing bye-law, was undetermined. But we may remark that we have reason to believe that a majority of the council were prepared, at the first business meeting of their body, to have voted for

election into that body the six gentlemen who were re-elected by show of hands at the March meeting; and we have, further, the strongest assurance that had matters not been brought to an untimely issue on the evening of the fourteenth, the six gentlemen who have been acting as a committee to revise the laws would have been again elected, in conjunction with some three others, to proceed with the revision of laws. We mention these circumstances simply to illustrate the fact that a spirit of conciliation was intended by the council, and that, in assuming that the invitation to resume office involved a resumption of the *status quo ante*, they felt that the only safely legal and honourable course was adopted; but they were prepared to place matters upon a legal footing in a conciliatory rather than an antagonistic or belligerent spirit.

Many of our readers will exclaim: But if this were so—if conciliatory overtures were made on the one hand, and accepted in a conciliatory spirit on the other—how, in the name of all that is reasonable, did the first meeting afterwards issue in fresh and irreparable rupture? This is just the question to which we can find no adequate or satisfactory reply. The report which we publish on another page furnishes none, and we can glean none from various communications we have had on the subject. It must be confessed that the remarks of the President at the outset of the meeting, to the effect that he felt he was making a mistake in resuming office, were not reassuring, and his remark that he should not so resume on the decision of a mere majority seemed almost in the character of a challenge, which a dispassionate looker-on might call injudicious. By a unanimous vote he and his colleagues were, however, again invited to resume office, and absolute peace seemed to have been secured. But a cloud was on the horizon. A spirit of distrust or antagonism still existed somewhere, and Mr. Hughes—we presume as the mouth-piece of the former opposition combination, which, we are informed, had been again invoked to combined action—challenged the position which the president and council had assumed in returning to office as not in accordance with the vote of the preceding meeting. So far as we can glean from the report, this was done moderately enough, but scarcely accurately. Assuring Mr. Glaisher that he was not correctly informed of the nature of the proceedings at the March meeting, Mr. Hughes proceeded to state them incorrectly. He stated that the meeting *elected* the president and his colleagues. This is an error. The terms of the resolution simply invited a *resumption* of office, and that resolution only did, and only could, refer to those colleagues who resigned with the president. The position of the other six gentlemen was based, as we have indicated, upon entirely different conditions. We think Mr. Hughes, or his party, was unwise in raising this issue at that time, and we cannot but think that the president was unnecessarily hasty in declining to enter into explanations, and at once assuming that the expressed doubt of an individual, or a party, was a sufficient reason for declining the unanimous invitation of a large meeting. As to the statement made in the report that Mr. Glaisher's only alleged ground for declining to act with the six gentlemen in question was that not one of them was a nominee of the council, we cannot but think there must have been some mistake, that he must have been misunderstood. As the law distinctly provides for society lists as well as council lists of nominees for office and officers elected, when such opposition lists exist are more truly and honourably elected by the society than any can be when no such occasion exists to bring the ballot into exercise, it seems simply incredible that the president should allege such a ground of objection; the more so when it is remembered that he has on former occasions expressed a conviction that the sturdy exercise of their rights and privileges by members was a sign of health in the society. Some mistake, no doubt, exists here.

Probably, as we have already suggested, too much of



the spirit of Montague and Capulet existed, and the crossing of swords was inevitable. All the same, it is a serious, if not a fatal, misfortune for the society. Whatever may be the varied views of individuals—and the case has assumed aspects which render varied views almost inevitable—there cannot be a moment's doubt as to the resignation of the council generally. Very few of them were present at the meeting in question; but all from whom we hear express their unhesitating and unchangeable resolve to retire. The charge of *camaraderie* has been somewhat amusingly brought against the council by some of the opposition—amusingly, because by the use of a French word to express the idea, it seems to be supposed that fellowship is a crime—but one thing is, we fear, for the prospect of peace we fear it, certain, namely, that sufficient *esprit des corps*—to borrow more appropriately from the French—prevails amongst them to ensure unanimity in this matter, the end of which is, after all, but the legitimate issue of the ill-judged agitation with which it commenced.

#### REPRODUCTION OF NEGATIVES.

M. GRAND, in the *Bulletin* of the French Society, describes, as a novelty, the method we suggested nearly two years ago. He says:—

"The necessity of reversing the negative when printing in carbon, or to work by double transfer if the former is employed in its ordinary state, has been one of the drawbacks to the practice of printing in pigments. To obviate the difficulty, it has been proposed to make a counter-cliché, and MM. Geymet and Alker have published a powder process, which, I fear, differs too much from ordinary processes to give good results in the hands of photographers other than the authors.

"The following is a means, already well-known, to obtain direct, one negative from another. It is only requisite for the operator to be conversant with alkaline development. You put under the negative a prepared dry plate, one of collodio-bromide, expose rapidly in the printing-frame, and develop with pyrogallie acid and ammonia, until you have secured a good positive transparency. This positive is then dipped into nitric acid, diluted with its volume of water. All the silver will be in this way dissolved, and there will remain upon the plate a very transparent negative image, formed by the bromide of silver not reduced.

"This image is now exposed to light until it has acquired sufficient density, when it is fixed with hyposulphite. A counter cliché will then have been produced in which none of the half-tones are lost. Moreover, by this method, negatives which are too opaque to give good results in carbon printing may be reproduced in a modified and improved form.

"I believe that this method is more simple than that proposed by MM. Geymet and Alker, and gives a better result than the Poitevin process, which requires the aid of camera and lens."

#### JOINING THE PHOTOGRAPHERS' BENEVOLENT SOCIETY.\*

SCENE OUTSIDE A STUDIO.—CLOSING TIME.

"HAVE you seen this, Mr. Headrest, the Rules of the Benevolent Society?"

"Yes, I read them over, and thought, if one or two others would, I would join."

"Pooh! It will never come to anything! What do you or I want with such an affair? True, I was out of a 'sit,' a long time last winter, but somehow, like the cats, I always come on my feet."

"Yet I have heard you say you were awful hard up, and could have had a 'sit,' down North, but had no money to take you."

"Well, yes; and I had lent all I had to give to my mule, you know—the chap on the corner with the three golden balls over the door."

"Just so. Now, don't you think it might happen again, and it would be very nice to be able to ask for a little help as a right to go to a 'sit,' or, if you were ill, what would you do?"

"Oh, as to illness, I am in a club; so are you, are you not?"

"Yes; but the club will help you only when ill, and the help then doesn't last long. What should I do if I were out of work a long time, and ill, and all my money gone? It would be nice to know I might have a place, but could not go to it for want of funds—very nice; and I having a wife and two children to keep!"

"Ah, there you are! I have no wife. But if you want to preach providence, come and have a glass of beer; it's dry talking. What do you say—you never drink until after the evening meal? Well, I do, sometimes two or three; but you have your wife to think of, and never drink much at all, I suppose?"

"No. What does a man want with much, as you call it? A glass or so in the evening is very well. And look here; the subscription is three shillings per quarter, if you like to pay that way—not the price, or barely the price, of a pint of beer a week. Don't you think you could drop the pint of beer and join?"

"I see you are on, my friend. You had better become local secretary for these parts—they want some one—and then you will see how many are going in. Get all the operators, retouchers, and ladies to join. What does a poor d——l of a printer like me want with it? When you have twenty members, I will join."

"As to being local secretary—well, I will think of it. In the meantime, you drink a pint of beer less a week, and send the money to Mr. Wilkinson; you won't regret it some day. Good night!"

"Good night!"

#### Correspondence.

##### MAGIC LANTERN IMPEDIMENTA.

SIR,—I have read correspondence respecting gas bags for dissolving views, and believe, with Dr. J. Nicol, that the plan of bag (square or camera shape) is labour in vain, and useless; and, could it be used, would be more trouble than the old wedge shape. I have found great difficulty in borrowing weights when out exhibiting, except the old round weights, and I have been in constant fear during the exhibition lest they should roll off.

I have used the square weights, also flat bars (which are decidedly the best), and I would say to all readers who use bags, do not be led away by all sorts of suggestions, but use those you know will answer and be safe, without constant fear of accident.

I know the gas bags, pressure-boards, and weights, are very cumbersome articles for travelling. I have abandoned them for two seasons, and am now constantly using the compressed oxygen and hydrogen gas in iron bottles, and find them very convenient for travelling and also home use. For the aid of many who may not know of them, I will describe them. A wrought-iron bottle, about three-sixteenths of an inch thick and four inches diameter, twenty-seven inches and thirty-six inches long, according to number of foot of gas required. Twenty-seven inch will hold seven feet; thirty-six inch, ten feet. At one end is a brass connection, which contains a valve of steel worked by a moveable handle to take off and on, and a union is fixed to connection to fix india-rubber tubing to jets. I also use a gauge, which tells me exact quantity of gas remaining, or being used in a certain given time.

The gas is pumped in to four hundred and fifty pounds pressure to the square inch, and, if seven feet of gas be used, it will last two sets of jets, by the aid of dissolving tap, about three hours. The cost of bottles filled with gas is about forty-two shillings and sixty-three shillings each, and they can be refilled at the usual prices. The bottle weighs about fourteen

\* From a Correspondent.



pounds and is very portable, and perfectly safe in careful hands. Great care must be used in opening valvo, as a very slight movement of the handle will give an increase of supply. The handle can be taken off, so that an inexperienced hand could not possibly let the gas out.

Should any of your readers require further information upon this subject, I shall, with your permission, be most happy to give it.—Yours, &c.,  
W. H. OAKLEY.

#### ELIMINATING HYPOSULPHITE OF SODA FROM PRINTS.

SIR,—Permit a simple amateur photographer, a constant reader of your excellent journal, to submit some observations on the subject of eliminating hyposulphite of soda from positive proofs on paper.

I have but little confidence, I must confess, in the employment of chemical solutions for the purpose of converting the hyposulphite of soda into any other compound, respecting which there is uncertainty as to its entire removal from the paper, and consequent ignorance of its ultimate influence upon the prints.

I am surprised that, in the endeavour to solve this difficult problem of the preservation of the positive proofs, so little attention is given to the remarkable process which you, sir, have invented, and which bears the name of collodio-chloride paper.

This paper, as it appears to me, possesses the following advantages:—Undoubted superiority over all albumenized paper, on account of the rapidity in printing, extreme and brilliant finish of the image, preservation for months of its sensitiveness, perfectly white, without special preparation, the ease with which it can be effaced, and, above all, the ability of fixing by means of a very weak solution of hyposulphite, which one may be sure of being able to remove by means of careful washing, the analogy being complete with the negative process, because the chloride of silver is contained in the pellicle of collodion, and not in the tissue of the paper.

For an amateur, unfortunately, the preparation of the collodio-chloride paper is difficult. That which is to be found in the trade, manufactured by Obernetter, of Munich, is good, but very dear. The point, however, to which I should desire to draw your attention would be, sir, that you should use your influence, on the one hand, with the manufacturers of photographic paper to devote themselves to the manufacture of collodio-chloride paper, so as to be able to sell it at a cheaper price than at present, which ought to be possible; and that, on the other hand, you should advise photographers to use this paper, of which the only inconvenience is a disagreeable tendency, sometimes, to curl, for which defect the manufacturers may, however, find a remedy, either in modifying the nature of the paper, or in choosing some other support for the pellicle of collodio-chloride.

Please excuse the length of this letter, and believe me, &c.,

PIERRE REVON, Banker.

Member of the Council of the Arrondissement of the Canton of Gray.

Gray, 14th April.

#### Proceedings of Societies.

##### PHOTOGRAPHIC SOCIETY OF LONDON.

A MEETING of the above society was held on Tuesday, the 14th, at the Architectural Gallery, 9, Conduit Street. Previous to taking the chair, Mr. Glaisher, addressing the meeting, said that when he left that room a little time since, it was with the firm resolve never to return to a position to which he had never aspired. He had found the duties very exacting, taking a great deal of his time—and his time was valuable. When circumstances arose causing him to leave, he had determined not to return. It had, however, been represented to him by many gentlemen whose opinion he valued, that it would be for the good of the society if he were to return, if only for a short time. It had also been told to him it was the unanimous wish of the society that the council should return to take upon themselves a continuation of those duties to which they had been so long trained, and they with himself had agreed to accept for a time. The position he (Mr. Glaisher) occupied was an anomalous one, and one in which he felt he was wanting in power. Indeed, he scarcely knew his own position, nor did the council know theirs, but they had returned because they wished to do the

society good. It was with this feeling they wished to act. He (Mr. Glaisher) desired, however, to say that before he took the chair he would wish to know whether it was the unanimous feeling of the meeting that he should return. If there were a difference of opinion among them, if the minority be of the smallest, he should feel inclined to leave that room. At the same time, if it were their wish he should still be their president, he could but feel, in accepting, that he had made a mistake. If any gentleman had come to him and had represented the tone and manner in which he had been driven away, he should have said, "Do not go back." Therefore in returning he felt he was making a mistake. He did not like to do things by halves, and what he did he wished to do well and earnestly, but he knew that many instances of earnestness would be brought forward as instances of his over-bearing character. However, if it were their unanimous wish he should return, he was willing to do so, and he believed the council would do the same.

The question was then put to the vote, when every hand was held up in the affirmative.

Mr. GLAISHER then expressed his desire, and that of his colleagues, to use their best exertions for the good of the society.

Mr. SOPWITH, having congratulated the president upon his decision, which he felt sure would prove beneficial to the society,

Mr. Jabez HUGHES observed that occupying, as he did, the position of chairman at the previous meeting, he gathered from the statements just made that Mr. Glaisher had been scarcely accurately informed of what took place on that occasion. It was true that the meeting did then elect the president and his colleagues, and were very pleased to have the opportunity of so doing. Upon the present occasion, when the question was asked, they most distinctly said yes; at the same time there was a little complication which it was most desirable should be cleared up. What he (Mr. Hughes) wished to know was, who were the colleagues of the president, inasmuch as a certain number of gentlemen were elected on the same occasion when the president and council were re-elected? If Mr. Glaisher meant that the six gentlemen elected at the February meeting were considered to belong to the council, he (Mr. Hughes) was sure the affairs of the society would work in that harmony which all would be too happy to see.

Mr. GLAISHER, in reply, said that after Mr. Hughes's remarks he was glad he had not taken the chair. It was a condition laid down, in the event of himself and his colleagues returning to office, that he should not work with those six gentlemen—not on any personal grounds, for he should be glad to act with any one of them, but because not one of those gentlemen was a nominee of the council. If the conditions laid down by himself and his colleagues were not accepted, there was but one action for them to take. Those conditions were well understood, and if Mr. Hughes said they were not accepted, there was but one way out of the difficulty.

Mr. HUGHES said he was but expressing his own sentiments, and not those of the society. As it was distinctly stated that the president and council would not return unless the six gentlemen were excluded, would Mr. Glaisher kindly tell the meeting the reason why? They had often been told that they always elected the nominees of the council, and had been asked why, if they disliked doing so, they did not nominate others? Once only, at the last February meeting, had this course been adopted, and of the six elected, three had been former members of the council, and one a former nominee.

Mr. GLAISHER repeated that there was not one gentleman of the six with whom he would not be glad to co-operate. It was the manner in which the business had been conducted that he objected to. As, however, there were dissentients, he must decline to resume the chair. He could not consent to occupy it unless there was a distinct understanding that he should work in perfect freedom.

Mr. HUGHES again put his question whether the re-election of the president and council meant the ignoring of the six? In reply to which,

Mr. GLAISHER said he must decline to enter any longer into the question, as he should absolutely decline to act with the six gentlemen. That being the case, there was but one thing for him to do. As for his colleagues, he must leave them to act individually as they pleased.

Mr. GLAISHER then quitted the room, followed by Lord Lindsay, Mr. H. White, and Mr. Mayland.

Col. STUART WORTLEY then proposed that the senior vice-president take the chair.

Mr. S. FRY seconded, and after some remarks from Mr. S. Davis and Mr. Hughes, Mr. Spiller consented to act as chairman.



Mr. SPILLER observed that he was called to occupy the chair at an exceedingly awkward and difficult moment; but in doing so he must earnestly beg of all to have the true interests of the society at heart, and endeavour to find some way in which to conciliate the president and the retiring members. The next few minutes would decide the future history of the society. Mr. Glaisher had worked well and earnestly during many years, and the society owed him a deep debt of gratitude. He (Mr. Spiller) would ask whether a vote should not be taken to invite him back, as he feared he would for ever be lost to the interests of the society. Having witnessed for so long a time Mr. Glaisher's great achievements, he (Mr. Spiller) earnestly wished to see him resume his position in the society, and if the meeting would waive for the moment the legality of the election of certain six members of the council, the dilemma would, perhaps, be got over, although, for himself, he could give no guarantee that the president would be induced to return.

Mr. BIRD was sure that, though there seemed to be a good deal of thunder in the air, all that was really desired was a reform in the constitution of the society. There was no ill-will whatever against the council, and at the very first meeting it was generally felt that the position of Mr. Glaisher should not enter at all into the question. He could not see why so much temper should have been introduced into the discussion. As for any little asperity on the part of the requisitionists, that had been fairly atoned at the last meeting, when the greatest regret was expressed for what had been hastily said. However, as Mr. Glaisher had expressed his determination in so decided a manner, it would be an insult to him, and would make the society a laughing-stock, if he were now asked to come back.

Mr. HART concurred with Mr. Bird.

Mr. HOOPER, while thinking it was the duty of the society to retain its present officers until the end of the session, held that its interests were paramount to those of any one gentleman, whoever he might be. He certainly understood that the members proposed at the last meeting were elected to form a council, and the society ought to retain them as it then decided. If the president felt he could no longer hold his office, he should be allowed to retire with becoming grace and dignity.

Col. WORTLEY then asked that the minutes be read, and the business of the evening proceeded with.

Mr. BADEN PRITCHARD, who had signified his intention of resigning his office of secretary, consented to act temporarily, and accordingly read the minutes of the annual general meeting.

On the CHAIRMAN asking the meeting to confirm the minutes,

Col. WORTLEY took objection to their accuracy in respect to the following paragraph:—"Mr. Hooper moved the following resolution, of which he had given notice: 'That the president, vice-presidents, treasurer, council, and secretary be requested to resume office for the remainder of the present session, and that at the next annual meeting all officers he elected in accordance with the new laws about to be framed.'" Col. Wortley observed, with reference to this, that he had tied Mr. Hooper down to name thirteen members of the council and two vice-presidents, but this was not noticed in the minutes.

Mr. HOOPER said his motion was printed before the meeting was held, and therefore there could be no mistake.

After a remark from Mr. F. HOWARD, to the effect that both gentlemen were right,

Col. WORTLEY asked how it was there had been no Journal that month?

Mr. GOSLETT said he had never been summoned.

Mr. F. HOWARD, in reply to Col. Wortley, said the first letter sent to the council was to ask them to resume office. Since then no communication had been sent. The first was sent so that they could do as they pleased.

Mr. J. HUGHES's impression with regard to the minutes was that they were correct. Col. Wortley certainly challenged Mr. Hooper to name the council separately instead of generally, but the motion was put from the printed copy, which was identical with the circular sent to every member.

Some further discussion followed. Col. WORTLEY expressing his intention to press for a division. Eventually a motion as to the correctness of the minutes was taken, and was carried with but one dissentient.

The CHAIRMAN then suggested that it would be as well if the present position of the society were considered. To do that properly, he would propose the holding of a special meeting, so that the government might be placed on such a footing as would ensure the business of the current year being carried out. If the

meeting would trust in him, he would see that the necessary notices for holding a special meeting were given.

Mr. HUGHES having spoken to a similar effect,

Mr. STILLMAN said he thought nothing could be done until it was known whether the council had any authority or not to call the meeting.

Mr. SPENCER observed that the gentlemen who had resigned had only done so individually; the majority of the council still remained, and as they were relieved of the conditions to which they had refused to accede, the six gentlemen elected would be in the place the society intended them to fill. Unless it lost its self-respect, the society must stand by those gentlemen.

Mr. HOOPER reminded the meeting that of the eighteen gentlemen who formed the council, three only had retired, so that the affairs of the society could still be carried on.

Mr. STILLMAN thought the members ought to know how the council was constituted before anything could be done.

The CHAIRMAN observed that Mr. Glaisher had taken his own action in the matter, but that action would not affect the future proceedings. As Mr. Glaisher would not have the issuing of the notices, the matter need not be discussed any further.

The subject then dropped, it being understood that the chairman would take steps to call a special meeting for the purpose of discussing the affairs of the society.

A paper, written by Mr. George Bruce, of Dunse, on "Collodio-chloride Printing on Paper," was then read by Mr. Pritchard, and specimens submitted.

The CHAIRMAN observed that immediately after Mr. Simpson had described the process, Mr. Bruce took it up, and had from time to time exhibited some excellent examples, one of which, at the recent photographic exhibition, excited considerable attention. It was, perhaps, a little disappointing that the method of preparing the paper was not divulged, as Mr. Bruce used Ohernetter's paper. Of course some portions of work must necessarily be delegated to commerce, still it was always better if the experimenter could know the exact nature of the materials he used.

Mr. HOOPER had had some experience of collodio-chloride in printing transparencies, both in the camera and by contact, and nothing could answer better. As albumenized printing was becoming every day more troublesome, he should be only too glad to see another process which should be more permanent take its place.

Mr. WHITFIELD had not found collodio-chloride pictures, even when the film had been floated on to ivory, more permanent than albumenized ones.

Mr. S. DAVIS observed that he tried the process soon after Mr. Simpson had made it known, but had found great difficulty in toning. The pictures were of a rich brown when removed from the printing frame, but after toning the image seemed to sink into the paper, and became of a bluish colour. To obviate the sinking of the image, he had tried some albumenized paper treated with the collodio-chlorized solution, but still the difficulty of toning was not surmounted. He thought more investigation into the character and composition of the paper used was needed before the process could be made practicable.

Mr. B. J. EDWARDS had found the prints tone easier after immersion in alcohol. In regard to permanence, his experience coincided with that of Mr. Whitfield; besides which there was the liability to injury on account of the abrasion of the surface caused by handling.

Mr. HART, as a manufacturer of albumenized paper, believed that the reason why collodio-chlorized paper was not made in England was on account of the methylated alcohol necessary to its manufacture. Such a vapour as was given forth was most injurious to breathe. As to the instability of albumenized prints, he thought that if the hyposulphite solution were made alkaline, and used not more than ten minutes after it was made, there was little fear on that score.

Mr. J. HUGHES had made a great number of experiments with collodio-chloride. In using leptographic paper his conviction was that the prints were more permanent than those on albumen; as to their superiority in beauty there could be no question. He had also tried various samples of Ohernetter's paper, including some which he had procured from Mr. Bruce, but had got involved in all sorts of troubles. On paying Mr. Bruce a visit to see his method of working, he found the process necessitated an amount of care and labour which would prevent it being used by unskilled hands, such as were now employed by photographers. His experience of the process was, that it was most uncertain in all its stages.

The CHAIRMAN thought there was so much that was interesting



in the subject that it might well form matter for discussion at a future meeting. He would suggest that, as M. Obernetter would exhibit at the meeting of the 12th May some negatives reproduced by the powder process, it would be a good opportunity for renewing the discussion.

A vote of thanks to the chairman then terminated the proceedings.

#### EDINBURGH PHOTOGRAPHIC SOCIETY.

The fifth popular meeting of the season was held in Queen Street Hall, on Wednesday, the 8th inst.

The exhibition consisted of a series of pictures from negatives taken by Mr. John Thomson during a six years' tour in China.

Mr. Thomson gave an interesting descriptive lecture, containing much information about the laws, manners and customs, &c., of the Chinese.

If the pictures and lecture are fair specimens of the illustration and matter of the book now in course of publication by Mr. Thomson, it will be a most valuable contribution to our knowledge of China and the Chinese.

### Talk in the Studio.

**CERAMIC PAINTING.**—We have frequently received enquiries on the subject of enamel painting, in reply to which we have been able to supply only very scanty information. We have just received a little work which will meet the purpose of all such enquirers. It is a treatise on painting china, glass, enamel, &c., by Mons. A. Lacroix, published by Leclercq, Barbe, and Co., 60, Regent Street. It contains full details of preparation of colours, fluxes, manipulation of the colours, burning, &c., and suggestions of various kinds which will be welcome to the worker in ceramic photography.

**SECOND-HAND APPARATUS.**—Mr. Morley has just issued a priced catalogue of a very large stock of second-hand lenses and other photographic instruments, including many by first-rate makers, which will interest many readers.

**INDECENT PRINTS.**—Mr. C. H. Colletto, solicitor to the Society for the Suppression of Vice, attended before Mr. Bridge to support a summons against Henry Hayler, of Pimlico Road, calling upon him to show why no less than 130,248 obscene photographs and 5,000 slides should not be destroyed, they having been seized by Inspector Harnett and Detectives Chamberlain and Marshall, of the E division.—Giles, the summoning officer, proved that no one had been on the premises for a week, and he had not been able to serve the summons.—Mr. Bridge, after carefully looking into the Act of Parliament, was of opinion that he was in a position to make the order for the destruction of the things seized in the absence of Hayler.—Mr. Colletto said the man could appeal against the destruction in seven days if he chose, but there was little chance of his running into the arms of the law. There were six cart-loads of the things. It was one of the grossest cases he had ever had anything to do with.—*Telegraph*.

**A NOVEL MARRIAGE.**—The *St. Louis Globe* says:—"The other morning Justice Jecko was called upon by a gentleman who requested the judge to accompany him to the photograph gallery of Mr. A. T. Urie, corner Forth and Market. The judge, with his usual urbanity, went. On arriving there, he found a young gentleman and lady from the lively town of Odin, Illinois, about to have their pictures taken. After the photographer had completed his task, the judge was informed that they wished to be married, whereupon the justice requested them to remain standing, and then, with the mellowed rays that came through the overarching skylight falling full upon them, and with the camera-obscure, like a mountain howitzer, pointed directly at them, pronounced the solemn and impressive words that united them for life. Mr. A. T. Urie officiated as master of the ceremonies, discharging his onerous duties with great grace and suavity of manner. The names of the happy couple are David Bugh and Julia Huddleston."

**EMBRACING A PHOTOGRAPHER.**—A FUNNY STORY.—Salvini, the actor (says a Toronto paper), when having a photograph taken, was so delighted with the proof that he flung his arms about the operator and embraced him. This was gratifying to the operator, and did not cost Salvini anything. A gentleman in this place, whose name we will not mention, was very much pleased with the great actor's artifice—as he

persisted in terming it—and, believing that appreciation is dearer to a true artist than money, he concluded to have some photographs of himself. When the proof was shown him he knew that was the time to fling his arms around the operator, but he could not pluck up sufficient courage. He thought he would wait a more favourable opportunity, and became very nervous in consequence. Pretty soon the operator had occasion to reach under a case of specimens for a cloth, and, full of desperation, shut his eyes and swooped down upon him. The frightened artist, believing that this was a new process for garrotting, straightway screamed murder, and sought to defend himself until the arrival of aid by beating the assassin over the face and head with a brush full of varnish. Every lick of the brush developed additional ferocity in the face of the customer, and consequently increased the terror of the operator, whose shouts aroused the inmates of the building, and brought to his help in quick succession a tailor, two dressmakers, four clerks, and a one-legged basket-maker. The benumbed and varnished victim was quickly overpowered, and, being sat upon by as many of the masculines as could be accommodated, was firmly held until the arrival of an officer. Fortunately, he was known by the officer, who recognised him from his apparel—not being able to see his features for the varnish—and, upon explaining that the cause of his coming down upon the operator was a sudden dizziness he experienced, he was released. A hack was obtained, and he was taken home, and his head put to soak in lime-water, for the removal of the varnish from his face. But it was found necessary to shave his scalp, as it was impossible to save his hair. He is glad now he got the pictures when he did.

**PHOTOGRAPHING COLOURS, AND FORGERY.**—A correspondent sends us an extract from the *Melbourne Argus* containing some curious details on the subject of photographing coloured surfaces in relation to bank-note forgery by photography. Mr. Perry, a Melbourne photographer, makes a claim of a discovery which enables him to defy the intervention of varied colours as a check to forgery. Having sent to the editor of the *Argus* a copy of a bank-note, he says:—"I think I may fairly say, without egotism, that the process by which this note has been photographed is entirely my own invention; I have never read or heard of the preparations it requires having been used before. The ingredients used are of such a nature as not to bring them under the notice of a photographer in his ordinary practice, and it is not likely that they would be easily discovered unless his studies were directed to chromo-photography. It is this fact which induces me to withhold the publication of the process, for should it become generally known, I fear it would be fraught with danger to those who repose on the fancied security of blue and coloured bank-notes." The *Argus* adds:—"A photograph (on a reduced scale) of a Union Bank note has been shown to us by Mr. Perry. It is a negative from a note printed in blue and other colours, and the artist has found no difficulty whatever in obtaining a faithful copy by a process which he has discovered. Mr. Perry has also shown us a negative of the same note obtained by the usual means employed by photographers, and the difference between the copies is remarkable. The artist informs us that, from the negatives he has obtained, notes can be reproduced in any colour or colours. The use of blue ink in note-printing, therefore, is no security against photographic forgery."

**RETOUCHING NEGATIVES.**—A correspondent of our Philadelphia contemporary says:—"Apropos of retouching, I wish to mention to you a method which succeeds remarkably well with me in the correcting of very weak negatives. I commence by printing from the defective negative a positive on paper, and then from that positive a negative also on paper. I fix without toning it, and then, whilst still wet, I place it on the back of the negative, to be corrected in such manner as to make the outlines of the picture coincide, viewed by transmitted light. I allow it to remain until perfectly dry and smooth, then with an ordinary pencil I perform by transmitted light the retouching necessary to increase the brilliancy of the lights, and by the means of varnish I render transparent those parts which I wish to make darker in the print. Printing with negatives prepared in this manner requires more time, but the effect obtained compensates for it with usury. Other merits of this process are the facility of retouching and the greatly softening effect which this presents, owing to the diffusion through the glass which is between the two negatives."



## To Correspondents.

**ARCHER CLARKE.**—Copyright in an engraving continues during twenty-eight years from the date of publication.

**POSTMASTER.**—There is always some little risk in pulling in and taking out wet plates from boxes, and care is the chief aid to immunity from tearing the film; but it is important to use suitable boxes, the grooves of which should be V-shaped. With such grooves and proper care no serious risk need be incurred. We believe that the majority of plate boxes now used have such grooves. 2. It is very difficult indeed to obtain a good copy of a mounted photograph, especially a small one like a card portrait, as the texture is generally very coarsely apparent. In the first place the card to be copied should be rolled as smooth as possible; or, if it can be removed from the mount, let this be done, immerse it in water, and lay face down on a plate of glass, and copy it through the glass. This will materially remove the effect of coarse grain. The best light is a diffused light, reaching the card equally from all directions. 3. The collodion in question is of a horny texture, and very apt to repel the bath. Probably some of the solvents have evaporated and made it thick. Add a little alcohol, which may possibly remedy the defect. An old developer loses its developing quality. 4. We fear that you will not be able to obtain Bigelow's Album from any library.

**F. M. M.**—We fear that there is no efficient method of repairing a cracked porcelain bath. Somewhat depends, perhaps, on the extent of the crack; if only slight, you might try to run marine glue into the crack.

**PUZZLED.**—We have very repeatedly given full instructions for producing enlargements by almost every method, both in the NEWS and YEAR-BOOKS. Perhaps one of the simplest complete statements of detail for several enlarging processes is that contained in a little work recently issued by Mr. Solomon, entitled "Photography in Four Lessons." Regarding the process you speak of having tried, we cannot, of course, tell in what point you have failed, unless you describe to us precisely how you carried out the operations. How, for instance, did you sensitize the paper? What paper did you use? What kind of negative, what extent of enlargement, and what kind of light did you try? It is always necessary to give a detailed account of your operations to enable us to point out probable causes of failure.

**OYSTERS.**—The cause of matt silver or oyster-shell markings is so various and complicated that it is quite impossible to discuss them fully in this column; but, as a subscriber, you are doubtless familiar with the fact that we have written many articles on the subject in back volumes, in which we have discussed the various causes and remedies. The most common causes are the use of a horny, repellent collodion, and the use of dark slides, or inner frames of dark slides, not perfectly clean. Age will modify the character of the collodion, and sometimes the addition of a few drops of water per ounce will effect a cure. The collodion you mention, although in most respects a very excellent collodion, is somewhat prone to this defect. Immersing the plate before it is thoroughly set as usual will also effect something. Let the plate rest on clean strips of blotting-paper, using fresh pieces with every plate. Be sure and wash well and frequently the inner frames.

**VOLCO.**—A tendency in collodion to produce the negatives lacking density may proceed from many causes. One of the most common is the use of insufficient pyroxyline. The addition of a grain or two of pyroxyline per ounce will often make all the difference between weakness and vigour in the negative. Some samples of pyroxyline will give vigour with three or four grains per ounce, whilst others require eight or ten to be employed to secure equal vigour. Then the quality of the pyroxyline very materially affects the question of density. But the conditions for making a suitable pyroxyline could not be discussed in the space devoted to this column. The proportion and quality of the iodides and bromides also affect density. Iodide of potassium or of ammonium, for instance, tends more effectually to produce density than the cadmium salts. The age of the collodion affects the question; a newly mixed and iodized collodion will often yield a thin image, and in a month or two will give density.

**JOSEPH PEACH.**—We fear that very few photographers would be willing to pay anything for the plan of mounting in question, but you can test it by advertising. Hermetically sealing a picture would not preserve it from change if it had the elements of change in itself, either from imperfect fixation or imperfect washing. The only mode in which you can test the willingness of photographers to pay anything for the information, that we can see, is to advertise the information for sale.

**E. L. P. T.**—We fear that varnish once applied to paper prints will not be very easily removed. The only mode in which it can be effected will be to soak the print in the solvent employed in the varnish. If a spirit varnish, soak in spirit; a succession of fresh baths of spirit may do something. If a benzole varnish, use benzole. But it is probable that the varnish may have permeated the fibre of the paper, and will be very difficult to remove. When it is removed, there is no effectual method of restoring a fading photograph.

**OXONIENSIS.**—The part played by copper in the developer is not well understood, but practical benefit seems to result from its use, and we see no objection to its use in cases of long exposure, nor to the use of the formula you name. 2. For long exposures, especially in warm weather, we think the addition of a little water is often beneficial to many collodions, and the first you mention especially, which, whilst very excellent, is somewhat horny and repellent. We are not in a position to give efficient advice as to which of the two collodions is best for interior work, as it is some time since we used the latter. 3. We have published all the suggestions for the avoidance of matt silver stains which we know; but it would be difficult to recapitulate them here. Suitable non-repellent collodion, addition of water, hasty immersion, clean inner frames, clean blotting-paper on corners, weakening silver bath, adding bromide to collodion, adding a little glycerine to bath, adding nitrate of potash to bath, bath in good condition—these are amongst the most important hints for prevention and cure.

**UNCLE SAM.**—The owner of a copyright photograph must fill up a form duly describing it, and all details as to ownership, to Stationers' Hall, and pay therewith a shilling to the Registrar, who duly enters the particulars. If you have access to our YEAR-BOOK for 1863 you will find the Copyright Act, and all particulars relating to securing its provisions, there published.

**THOMAS ERWIN.**—Your cards generally are good. No. 3 is a little flat from over-intensifying; No. 5 thin and under-exposed; No. 6 a little lacking in definition; No. 7 under-exposed. On the whole, the work, as ordinary commercial work, is a fair average.

**A. G. W.**—Your failure is chiefly due to under-exposure. The negative you forward should have had at least twice the exposure. It is slightly under-exposed even for a collodion positive, and a negative, as a rule, requires two or three times the exposure of a positive.

Several Correspondents in our next.

## METEOROLOGICAL REPORT FOR MARCH.

BY WILLIAM HENRY WATSON.

Observations taken at Braystones, near Whitehaven, 35 feet above sea level.

Date.	Morning.	Noon.	Night.	Direction of Wind at 9 a.m.	
1	10°	50°	43°	S.W.	Rain at night.
2	43	48	40	S.E.	Fair all day. Hazy and gloomy.
3	46	18	40	S.W.	Fair all day. Sunny.
4	42	48	43	S.	Fair all day. Foggy and gloomy.
5	44	47	12	S.	Rain a.m. and p.m. Slight aurora.
6	41	48	31	E.	Fair all day. Slight auroral light.
7	44	49	36	E.S.E.	Fair all day. Very bright.
8	42	48	36	W.	Rain at night.
9	44	48	56	E.	Snow showers this afternoon.
10	30	36	33	N.	Snow showers a.m. and p.m.
11	28	38	56	E.	Fair all day. Sunny.
12	42	—	—	N.W.	Snow early this morning. Showers of rain p.m.
13	40	49	44	N.W.	Fair all day. Gloomy.
14	44	49	47	N.W.	Fair all day. Gloomy.
15	40	46	46	N.W.	Fair all day. Gloomy.
16	46	48	41	S.W.	Rain a.m. and p.m.
17	44	48	46	S.W.	Fair all day. Gloomy.
18	46	50	40	N.W.	Fair all day. Sunny.
19	42	48	40	W.	Rain a.m. and p.m.
20	42	50	46	S.W.	Heavy hail shower early this morning.
21	42	48	44	S.W.	A little rain a.m. and p.m.
22	44	51	47	W.	Rain a.m. and p.m. Heavy a.m.
23	48	48	47	S.	Foggy all day.
24	48	50	40	W.	Fair and sunny all day.
25	40	52	48	N.W.	Fair and sunny all day.
26	46	50	44	S.E.	Fair and sunny all day.
27	41	49	48	S.W.	Rain and strong wind a.m. and p.m. Swallows.
28	44	47	48	S.	Rain and strong wind p.m. First butterfly.
29	50	50	46	S.	Rain a.m. and p.m.
30	49	50	48	S.W.	Rain a.m. and p.m.
31	48	49	46	S.S.W.	Fair all day. Gloomy.

We arrive at the following from the above data:—

	Mornings.	Noons.	Nights.
Maximum temperature during the month	50°	52°	48°
Minimum ditto ditto	28	36	34
Mean ditto ditto	42.9	48.2	42.7

Number of days during the month on which no rain fell... 15

Number of days during the month on which rain fell... 16

Number of fair days on which it was gloomy... 7

ditto ditto ditto sunny... 8

**EARLY VISITORS.**—Owing to the exceptional mildness of the weather, the swallows (*Hirundo rufa*) have this year made an unusually early appearance. They were observed on the 6th April in 1872 and 1873, while this year they were seen on March 27th. A butterfly was seen on the 28th.

April 2 1874.

Wind from N.W. and S.W. prevailed.



## The Photographic News, May 1, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO

LORD LINDSAY'S PHOTOGRAPHIC PROCESS—THE VOIGTLANDER GOLD MEDAL—A NEW PHOTOMETRIC RECORDER—PHOTOGRAPHIC JOURNALS ON THE CONTINENT.

*Lord Lindsay's Photographic Process.*—It is probable that the starch dry process will be the one selected by Lord Lindsay and his chief photographer, Mr. Gill, for the Mauritius transit of Venus expedition, some very favourable results having been already obtained with the method. The collodion plate is sensitized in the ordinary manner, washed two or three times, and then coated with a thin solution of starch, which dries, and forms a most stable protective to the sensitive film. Before development it is simply moistened in distilled water, and then treated with alkaline or acid developer, as may be desired. The starch gives great stability and strength to the film, which will resist a very great degree of mechanical friction without being injured; moreover, no risk of expansion or contraction of the image is to be feared when the film has been thus treated. Lord Lindsay anticipates starting from this country next month, although the expedition may, unfortunately, be delayed by the accident to the lens to which we have already referred, the extent of damage being greater, it turns out, than was at first hoped. Fears are entertained whether Mr. Dallmeyer will be able to make good those portions of the lens which have been broken, for although the instrument has but a diameter of four inches (its equivalent focus being thirty-eight feet), the elaborate nature of its construction is beyond conception.

*The Voigtlander Gold Medal.*—It is gratifying to learn that the Vienna Photographic Society awarded to M. J. B. Obernetter, of Munich, the Voigtlander gold medal for 1873, for his process of multiplying negatives by means of the powder process. M. Obernetter not only suggested the useful application of the powder process in this direction, but worked out the application so thoroughly and effectively that we are told no difference can be observed between impressions taken from the original negative and from the duplicates. This is in great measure due to the fact that the duplicate negatives are produced direct from the original without the aid of a transparency, so that none of the vigour or detail of the original are lost, negatives producing negatives, and positives positives. As many as three thousand negatives M. Obernetter has already reproduced by these means for his own work, and this circumstance alone proves how really practical and valuable the process will be to all photographers. We do not know if any Voigtlander gold medal has ever been previously awarded, but certainly none has been given for the past four years with the exception of the one just referred to, and there can be no doubt as to the propriety of thus recognising the services of M. Obernetter, who in many other ways has advanced photographic matters. His success in working out the collodio-chloride process, and producing a good commercial paper of this character, as also the high excellence of his Lichtdruck pictures, are matters which ought not to pass uncared for.

*A New Photometric Recorder.*—Dr. Roscoe has communicated to the Royal Society the details of a self-recording method of measuring the intensity of the chemical action of total daylight. A constant sensitive paper is exposed by a self-acting arrangement for accurately known times, at given intervals, throughout the day. The insolation apparatus, stocked with sensitive paper, is placed in position either early in the morning or on the previous night, and by means of an electric communication with a properly-arranged clock the sensitive paper is exposed every hour during the day, so that in the evening the observer has only to read off in the ordinary manner the hourly intensities which have been recorded upon the paper during the day. In order to

estimate the value of the successive tints which have been thus secured, other records of known intensity are obtained for comparison. A duplicate arrangement of a clock and insolation apparatus is set going, by means of which disks of the constant sensitive paper are exposed each hour for successive known intervals of time, varying from two to thirty seconds. After an interval of an hour another set of disks are exposed for the same series of intervals, and series of insulations are repeated once every hour during the day. On unrolling at the end of the day the strip of sensitized paper which has served for the exposures, black disks showing where the paper has been stationary for the hour are seen, and between each of these are found ten circles variously tinted, ranging from one, scarcely visible, representing two seconds' exposure, to that which has been darkly coloured by an exposure of thirty seconds. Amongst these, one will be found of a shade to enable it to be read off by the monochromatic soda flame, on a graduated fixed strip, as Dr. Roscoe has explained in previous communications. The manner of preparing strips or rolls of chloride paper of constant sensitiveness is explained in Dr. Roscoe's paper, as also other practical and important details.

*Photographic Journals on the Continent.*—The two German photographic journals, *Licht* and *Helios*, have now ceased to exist, the former being the organ of the Berlin Photographic Society (not the Berlin Society for the Advancement of Photography, be it borne in mind), and the latter being the organ of the Dresden Photographic Society, whose president and editor, Dr. Krone, is commissioned to proceed to the Auckland Islands to observe the transit of Venus on behalf of the German Government. Germany is still, however, well represented by photographic journalism, there being no less than four periodicals still in existence: the *Photographische Mittheilungen*, the *Photographische Archiv*, the *Photographische Correspondenz*, and *Photographische Notizen*. The two former are North-German publications, and the two latter Viennese. France has two periodicals devoted exclusively to photography; and Belgium, Holland, and Italy, one each respectively.

### ON PRINTING AND TONING COLLODIO-CHLORIDE PAPER.

BY GEORGE BRUCE, OF DUNSE.\*

THERE is not a doubt that if all the members of our profession aimed at a higher standard of negatives, there would be less boasting of the number of plates taken in a given time, and more thought and skill expended to make a few good ones. But it may be asked, "What about the exchequer? How can money be made by a professional photographer, and honourable retirement from business looked forward to, if we do not 'push the trade'?" All I can say in answer to this question is, that the taking of fine photographs cannot be thought of in the same way as a trade in groceries. What would Wilkie have given to some of his patrons, had he measured his work by the paltry sums of money he got from them? The gentlemen who made the terms would have been rightly served had the artist given them bare value for their money; but in doing so the world would have lost treasures of enduring delight, and the name of Wilkie as a great painter would have remained for ever unknown.

I believe that no photographer can devote sufficient time and skill to the execution of his work whose mind is constantly running upon £ s. d.; and while it is imperative that we should be able to live as well as merely to exist, yet our gain should not be secured by producing quantity so much as quality, charging in ratio to the efforts put forth.

The photographs I sent to the Exhibition were, as I said before, printed upon collodio-chloride paper prepared



by Herr Obernetter, of Munich. That gentleman has supplied this paper to photographers for some years past; and as ever since he began to manufacture the material I have used it, I have acquired considerable experience in working the material.

For the first year or two I found great difficulty in printing my work upon it; but the faults inherent to the paper at that time, such as the tendency of the film to peel off when the prints were immersed in water; the hard, horny character of the film itself, which cracked so easily that it was next to impossible to pass the prints through the toning and fixing baths uninjured; the want of sufficient silver on the film to give depth and richness to the shadows—these have been entirely overcome. The material now sent me is on the whole very good, although in some samples the paper on which the film rests is too thin to support it, so that when the prints are wet they curl up into tubes, and consequently require more care and skill in handling to get good pictures than they do when the film rests upon a thicker basis.

To show, however, that good prints, free from stains and cracks, may be secured upon the thinnest sample of collodio-chloride paper, I may mention that the photographs exhibited by me were printed on such samples.

In dealing with this paper I avoid printing too deep—that is, scarcely so deep as when using albumenized paper, as the prints lose but little of their depth in passing through the fixing bath. The paper requires great care in handling. When cutting the sheets ready for printing upon, and when examining the progress of printing when in the frames, I find that the finger touching the sensitive surface for a moment is sure to cause a stain when you come to tone the prints. The paper will keep good for days between printing and toning—a property, no doubt, useful at times, when one is busy and cannot get the day's work toned at night, or when dull weather sets in and printing goes on slowly. I am impressed, however, with the idea that this merit in prepared sensitized papers should be taken advantage of as seldom as possible, as I am convinced that the taking of silver prints out of the frames, and laying them aside for days or weeks before finishing, is an arrangement not conducive to improve their appearance, but rather the reverse.

It is, I believe, generally admitted that a wet or dry plate cannot be developed too soon after exposure; and if this holds true with sensitized plates, the same follows with sensitized silver paper when once the light has acted upon its surface. This being my opinion, I do not care to keep my prints any longer than need be before they are toned.

My toning bath is made as follows:—

Stock Solution. No. 1.

Sulphocyanide of ammonium	...	1 oz. 2 drs.
Distilled water	...	50 ozs.

Stock Solution. No. 2.

Gold	...	35 grains
Distilled water	...	50 ozs.

Fixing-bath.—Hyposulphite of soda	...	5 ounces
Distilled water	...	30 "

The gold I use for toning is prepared according to Col. Stuart Wortley's formula, given in the YEAR-Book for 1871, page 91, and it gives in my hands more uniform results when toning collodio-chloride paper than I ever obtained with the ordinary commercial samples of chloride of gold. Why I cannot tell, any further than that in preparing your own chloride of gold you know exactly what you have at hand, and the strength of the toning bath is more under your control. This "control" is absolutely necessary to success with collodio-chloride papers, as I find that anything more than the strength given in the formula produces a flat, eaten-out picture, without any depth; while, on the other hand, too weak a toning bath gives heavy, opaque brown tones. Thus, if

the toning goes on too quickly, you lose depth and richness; if very slowly, a brown, leathery tone is produced, which is far from satisfactory.

The reason in the first case is, that the prints pass so rapidly from brown to black, that before you can well get them removed from the bath the point where richness lies is often lost. And, in the second place, the sulphocyanide of ammonium solution in some measure destroys the transparency and purity of the prints when they are left too long in contact with it. Particular care and attention must therefore be given to the toning bath, so as to have it neither more nor less than the strength stated, as collodio-chloride photographs are much easier stained in toning than prints upon albumenized paper; and, when unequal toning does take place, it is more visible in the former than in the latter.

In making up a bath, equal quantities of No. 1 and No. 2 are mixed, plenty of chalk being added, letting the whole stand for from three to five hours before use. With some samples of this paper the bath can be used at once; but with other sheets this is not the case, a deposit of gold taking place over the whole prints, and destroying the purity of the whites. It is better, therefore, to err on the safe side, by making up the bath a considerable time before it is required, and thus be assured of having a uniformity in one's photographs.

When I have many prints to tone I use two flat dishes capable of holding (say) a dozen prints each. I filter the solution into these dishes to the depth of one-fourth of an inch; were the liquid deeper the prints would not keep flat.

I wash in three changes of water; and as the prints generally curl up into tubes, I open each of them separately in the water, so as to get the surface uniformly washed. If this is not done, and done in each separate dish of clean water, uneven toning will be sure to take place. When the prints have been properly washed with a quick but gentle movement, I open up each picture and lay it flat in the bath face downwards; and when the dish is full I begin at the first and turn it over, brushing the face with a camel's-hair brush, and continue the process until the whole have been so treated, afterwards turning them back again into their former position, and so on without cessation, until the prints are ready to leave the bath. When stains occur in the course of toning, lift the print out of the solution, dip the brush in alcohol, and rub the spot slightly. Then immerse the print again, when it will be found that the stain has disappeared and the print has been saved.

When fixing the prints the same care is required in laying them separately in the fixing solution, turning them over, and keeping them in motion until they are fixed, which is completed, when the fixing bath is new, in two or three minutes.

When removed from the bath, the prints are immersed for a few minutes in three or four changes of water, and put under the tap for an hour or two. The water is then shut off, and they are left all night and throughout the next day until the afternoon; the water is changed now and again. The prints are then trimmed and mounted.

The system in use amongst many of the profession, of cutting the prints to the exact size wanted before turning them, cannot be readily adopted with collodio-chloride pictures. In their case the paper should always be a little larger than is necessary, allowing not less than one-eighth of an inch to be cut off all round after the prints have been toned, fixed, and washed. The reason for this is that the edges of the prints are very curly, and the film becomes frayed in the course of washing; by cutting away this frayed curly part, they are more easily and neatly mounted. As it is impossible to lay these prints upon blotting-paper and dry them in a flat state without cracking the surface, another method has to be put in practice for the purpose of trimming them. I use a piece of thin plate glass cut to the exact size of what the carte-de-visite



print should be, the edges being ground and the corners slightly rounded, so as not to scratch the picture. If the prints are more than ordinarily curly, I open them *underneath* the water, and lay the sheet of glass upon the face, and then lift both of them out of the water at once, the moisture between the two enabling me to move and adjust the glass over the print with the greatest ease. I then with a pair of long-bladed scissors cut along the four edges of the glass, and thus secure a straight clean-cut print without damaging the surface of the photograph.

The medium I use for mounting is starch, carefully boiled, as thick as possible. It is, while still warm, poured into the centre of a muslin cloth, the corners of which are drawn together and held firmly with the left hand, while the right hand presses the bag and causes the pure starch to exude through the interstices of the cloth—the result being a paste perfectly free from gritty matter, and of the right consistence for mounting. A sheet of thick plate glass is covered with a damp cloth, and the prints are lifted from the dish and laid upon it in a wet condition, the water on the face of the prints and the damp cloth preventing them from curling. They are then pressed quite flat with another cloth, and dried before they are starched.

After the prints are mounted, dried, and spotted out, I roll them upon a hot steel plate; they are then put up in dozens into paper and laid upon the machine plate, and when warm are rubbed over with "Solomon paste," which gives them a richness and transparency they would not otherwise possess.

If desired, these photographs may very easily be covered with Mawson's print varnish or enamel collodion by coating them with a camel's-hair brush of the same breadth as the card. In my own practice, however, I rarely varnish the pictures, as I think they are more beautiful and artistic when simply finished with wax paste.

And now I have brought to an end my remarks on the production of collodio-chloride prints; but I cannot close this paper without expressing my regret that so valuable a method of printing, given so generously to the profession by Mr. G. Wharton Simpson, should have been so little practised amongst us, considering the beauty and delicacy of its results. I must also express my surprise that the manufacturers of photographic papers in this country should still leave those of us who wish to print our work by this process to get the material for the purpose from the Continent. The distance it has to travel has been, and must always be, a drawback to its general use, and especially in warm weather. Meanwhile, until a manufacturer be found in Britain who will make a first-class collodio-chloride paper, those desirous of trying the material may obtain it of good quality from Herr Obernetter, of Munich. As I am particularly anxious that this method of printing should have a fair trial, and past experience has shown me that it is of the utmost importance that the printer should receive the paper direct from the manufacturer (for only in this way is full justice done to both), I have written to Herr Obernetter, requesting him to supply small parcels to any gentleman desirous of making experiments in this direction.

## SPECTRUM ANALYSIS AND PHOTOGRAPHY.

BY J. NORMAN LOCKYER, F.R.S.\*

In the year 1863 we have another equally distinct advance to chronicle, but this time the work is done in France. Mons. Mascart—a name very well known to physicists—undertook a tremendous work, which he has not yet completed, namely, a complete investigation of the ultra-violet solar spectrum.† Instead of using a quartz prism, as Dr. Miller had done before him, Mons. Mascart uses a diffraction grating—that is to say, an instrument by means of which the light

is not refracted, as in the case of the prism, but diffracted by an effect of interference of fine lines ruled on glass. Mons. Mascart has shown it to be possible, by means of reflecting light from the first surface of the diffraction gratings, to get light diffracted without its going through the glass at all. In this way, therefore, you avoid altogether the imperfect transparency of the glass. Professor Mascart has gone on advancing every year, until now he has completed a photographic map, not only of the solar spectrum extending about as far as the line R, by means of photography, but he has been able to observe as far as the line called T. There he finds the solar spectrum ends; but in the case of a great many vapours—such, for instance, as that of cadmium and other metals of the same nature—he finds he can go on photographing very much further, and has been able to photograph almost as far as the eye can see—that is to say, to a distance, as I have already told you, five or six, or even seven times as far from the line H as H is from A. So that you see, thanks to photography, we can now photograph six times more of the spectrum than we can see of it with the eye ordinarily.

I next come to a very beautiful reflex action of spectroscopy on photography; and now I must take you back to America. I am nearly certain that every one in this room is perfectly familiar with the name of Rutherford in connection with celestial photography, but if you will allow me I will point my reference to him by throwing on the screen one of his magnificent photographs of the moon, which he was good enough to give me some little time ago; and I am anxious to show this on the screen, especially to show you the wonderful skill of which he is capable. Unfortunately, I am not able to throw on the screen a photograph of the magnificent solar spectrum which we owe to him, the most magnificent photograph of the solar spectrum—and I say it with the intensest envy—which I think it is possible to obtain. However, I have a copy of it on the wall, and it is well worth inspection. Rutherford, whose name is associated with that of Mr. Delaune with regard to celestial photography, was not content with the reflector, the very instrument by which this beautiful photograph of the moon, which I will show you, was taken. He lives in the centre of New York, and I suppose New York is almost as bad as London for tarnishing everything that the smoke and atmosphere can get at; and he came to the conclusion that he must either abstain from celestial photography altogether, or else make a lens—and a lens with Mr. Rutherford means something over 15 inches diameter—which should give him as perfect an image in New York with 15 inches of glass, as a perfect reflector of 15 inches aperture would give him as far away from a city as you please. Mr. Rutherford, who never minces matters, knowing that it was absolutely impossible to get such a lens as this from an optician, who of course neglects almost entirely the violet rays—the very rays which Mr. Rutherford wanted, when he makes an ordinary telescope, determined to make such an one himself. He thought about the matter, and he came to the conclusion that in any attempt to correct a lens of the magnitude for the chemical rays, the use of the spectroscope would be invaluable. He therefore had a large spectrocope made, in order to make a large telescope, and then we have just as distinct an improvement upon the instruments which we owe to the skill of those who first adopted the suggestion of Sir John Herschel, and brought together the chemical and the visual rays, as the improvement we owe to Herschel was upon the instruments which dealt simply with the visible rays. Mr. Rutherford simply carts away the visual rays bodily, and only brings together the chemical rays; the result of his work being a telescope through which it is absolutely impossible to see anything, but through which the minutest star, down, I believe, to the tenth magnitude, can be photographed with the most perfect sharpness. This is the instrument of the future, so far as stellar astronomy is concerned. Having thus achieved what he wished in the construction of this instrument, and having the spectroscope, Mr. Rutherford commenced a most elaborate research, which, I am sorry to say, he has never published, for it would be of the greatest value to any photographer or any astronomer among us, upon every kind of collodion which he could obtain in America or in Europe, and upon every possible arrangement of lenses. Mr. Rutherford found that some collodions which he got were so perfectly local in their action, as to be almost useless for that reason, and that other collodion were so general in their action that they were also almost useless for the exactly opposite reason. I will now throw on the screen the line G and the lines in the green, or rather the lines approaching to the green near F: with ordinary collodions such as one generally get—that is to say, collodions not absolutely good, but free from both the extremes referred to by Mr. Rutherford—we want something like

\* Continued from page 197.

† "Annales Scientifiques de l'Ecole Normale Supérieure." Vol. for 1864, page 219.



five seconds for the part near the line G. Well, when you go a little way along the spectrum in the less refrangible direction, you have to put minutes for seconds—in other words, the exposure has to be sixty times as long. I have another photograph of the spectrum, which will show you the part of the spectrum less refrangible than the line F to which I have referred. This photograph which you see on the screen now required very nearly half an hour.

Those of you who are most familiar with the solar spectrum will recognise the extreme importance of Mr. Rutherford's contribution to photographic spectroscopy, when I tell you that, in the opinion of the best judges, his photograph of the solar spectrum is quite as admirable and excellent as is the photograph of the moon which I have just shown you on the screen. During the last year this question of the solar spectrum has again been considerably advanced by photography in America. Mr. Rutherford's photographs, admirable although they are, are refraction photographs, that is to say, prisms were used, and more than this, prisms of glass. You will, therefore, quite understand that the photograph which you see extends only a very little distance beyond the lines H. But America was not satisfied with this, and in the person of Dr. Draper, the son of the Professor Draper whose name is so honourably associated with the commencement of work done in photography thirty years ago, Dr. Draper has just now photographed a solar spectrum far beyond H. A copy of his photograph is on the wall, but unfortunately I have not a copy which I can throw on the screen.

I have already referred to the extreme importance of photography in astronomy, and the point that I wish to urge to-night, after what I have stated regarding all the work which has been done up to the present time, is this. That what photography has been in the past to astronomy—what it will be in the future no one can say—such can photography, and such must photography, be to chemists and to physicists. Of course, in the way of photographic application, it is scarcely fair to say that a daily photographic record of the prominences around the sun is a question either of physics or of chemistry. But still the method which enables us, or which, I hope, will enable us shortly, to obtain a daily photograph of every prominence which bursts out—although absolutely invisible to our eyes—on the sun, is a method which depends on physical laws, and has nothing to do with astronomy in the ordinary sense. If you will allow me, I will show you now on the screen a photograph of a drawing which was made by an eminent Italian observer in India during the last eclipse. It is a drawing made by Professor Respighi, of the sun's corona, as seen by the spectroscope; and I hope in the next eclipse we shall not any longer have merely drawings to refer to, but that we shall have a photograph which can be bodily brought here, and which will let us know exactly how the matter stood. You see there on the screen three rings—a red ring, a green ring, and a blue ring. They are red, green, and blue, because the element in that part of the sun's atmosphere hydrogen gives us lines in the red, green, and blue; and they are rings because the hydrogen atmosphere extends in the most admirably regular way all round the sun. In fact, we may say, that in observations of this kind, we use the corona instead of the slit, and if that is good for the corona it is perfectly obvious to you it is good for the chromosphere—for the brighter regions lying closer to the sun than the corona does—as we know that it gives a line of such intense blue, exactly where photography, as it is generally carried on, has its strongest *point d'appui* in the spectrum; and it is quite clear to you that we ought to be able to get a photograph of this every day, just as easily as we saw it in India during the eclipse.

We will next consider the application of photography, no longer to the mere solar spectrum, but to the physics of the sun. What is the solar spectrum? It is the continuous spectrum of the sun, minus certain portions where the light of the continuous spectrum has been absorbed. What have been the absorbers? The gases and vapours, generally speaking, in an excessively limited zone of the sun's atmosphere, lying close to the bright sun we see; close, I say, to the photosphere. This zone is called the reversing layer. Then if the solar spectrum is the result of the absorption of this reversing layer, what will happen to the solar spectrum if the constitution of the layer changes? Obviously a change in the solar spectrum. Now, recent researches carried on by means of photography show us that if you take any particular vapour in the reversing layer, which you may call A, for instance, and then assume that the quantity of A in the layer is reduced, the absorption of that particular vapour will be reduced; what then will be the result on the photograph of the solar spectrum? Some of the lines will disappear. Suppose that this particular

vapour which we call A, instead of being assumed to decrease in quantity increases in quantity, what will happen to the solar spectrum? The same researches have told us that as its quantity increases its absorption will increase, and that its increased absorption will be indicated by an increase in the number and in the breadth of the lines absorbed. What, then, will happen to the solar spectrum if any change of this kind is going on? The photograph of a solar spectrum taken, say, to-day, may be different from the photograph of the same part of the spectrum taken at some distant period. What is the distant period we do not yet know—whether three months, six months, six years, or eleven years; but, at all events, there is reason to think already, that if we had a series of photographs of the solar spectrum, taken year by year, that we should see very great changes in the spectrum. Allow me to show you a photograph of a very limited portion of the solar spectrum, and I will prove my case; and let me tell you I could not prove my case if photography had not been called in, because if the existence of any particular metal, or of the increase of any particular metal depends on such a small matter as one line among 10,000, what will happen if a man neglects to observe this change? People will say, "Oh! in a research of that kind it is altogether excusable if he has made a mistake." But if you have a series of phenomena recorded by means of a camera on "a retina which never forgets," has Mr. Delarue has beautifully put it, and if you compare those pictures day by day, and year by year, the thing is put beyond all question when you get one line disappearing, or another line appearing.

Now we have before us a part of the solar spectrum near the line H, and I wish to call your particular attention to one line. We have admirable drawings of the solar spectrum taken about the year 1860. If the draughtsman was recording by means of his eye the lines in the spectrum, he would not be very likely to overlook a line darker than some he inserts, but he might easily overlook finer lines. Now, it is a fact that in the most careful map that we have—a map drawn with a most wonderful honesty and splendid skill—a line is absent in the region indicated, which line is now darker than some that were then drawn, and that line indicates the presence of an additional element in the sun—strontium. I do not make this assertion thinking that subsequent facts will show the drawing to be wrong, but because I see reason to believe that what we know already of the sun teaches us that it is one of the most likely things in the world that strontium was not present in such great quantity in the reversing layer when the drawing was made; but, however that may be, I think you will see how important it is that this photograph, which I have just thrown on the screen, should be compared with photographs made five, ten, fifteen, a hundred, or two hundred, or as many years as you like ahead, and it is in this possible continuity of observation of the solar spectrum, carried on for centuries, that I do think we have in photography not only a tremendous ally of the spectroscope, but a part of the spectroscope itself. Spectroscopy, I think has already arrived at such a point, at all events in connection with the heavenly bodies, that it is almost useless, unless the record is a photographic one. I am glad to say that only to-day I have had a letter from Dr. Draper, who tells me he has at last succeeded in getting an admirable photograph of the spectrum of a star. Now that is of the very highest importance, because the sun is nothing but a star, and the stars are nothing in the world but distant suns; and as long as we merely investigate the sun, however diligently or admirably we do it, and neglect all the others, it is as if a man who might have the whole realm of literature to work at should confine himself to one book, and that book probably not a very good representative of the literature of the country he was examining into.

(To be continued.)

## THE COLLODIO-BROMIDE AND SHELLAC PROCESS.

BY J. F. PLUCKER.\*

THE collodio-bromide process is, without doubt, the simplest dry plate process, and yields results quite as beautiful as, if not more so than, the silver bath method. The preparation of the plates is a very rapid matter, and there is no silver bath necessary, a great advantage when large plates or enlargements have to be worked in the camera. The plates are developed very uniformly, quite clearly, and free from spots. In the case of objects which reflect many chemical rays, the sensitiveness is the same



as that of ordinary plates; on the other hand, where the reflected rays are weaker, as in the case of foliage, shadows, &c., the sensitiveness of the collodio-bromide plates is even greater than that of the ordinary wet films.

After many experiments with collodio-bromide prepared according to different formulæ, M. Plücker has succeeded, by the addition of yellow shellac to the mixture, in securing excellent results. His method is thus summarized:—

1. *The Bromide Collodion*.—In one hundred cubic centimetres of alcohol are dissolved two grammes of bromide of cadmium and half a gramme of bromide of ammonium. To this are added two and a-half grammes of pyroxiline and one hundred and fifty cubic centimetres of ether, then eight decigrammes of yellow shellac which have been dissolved in a water bath, and finally three drops of sulphuric acid. After this collodion has stood for some two or three weeks it is ready for use.

2. *Sensitizing the Collodion*.—About an hour before employing the plates the collodion is treated with nitrate of silver in the following manner:—Into a test-tube about twenty centimetres long and fifteen millimetres broad is put one gramme of finely powdered nitrate of silver crystals, together with four cubic centimetres of rectified alcohol and one drop of distilled water. This is carefully heated over a spirit lamp, and then poured into fifty cubic centimetres of bromide collodion contained in a wide-necked stoppered bottle. This sensitizing of the collodion must, of course, take place in the dark. The mixture is thoroughly shaken for some seconds, allowed to stand for an hour, and then poured into another bottle.

3. *Preparation of the Plates*.—The plates are treated in the ordinary manner with the collodio-bromide, a little ether being added if the solution pours too thickly. More collodion must not be sensitized than is required, for it does not keep good for any length of time. The amount just mentioned of fifty cubic centimetres is enough for twelve plates measuring 11 by 15 centimetres, or for two plates of 27 by 33. The plates, after being coated with the collodion, are washed with rain or distilled water, to free them from any free nitrate of silver that may be upon them. Then they are allowed to dry; or they may, before desiccation, be treated with tannin, dextrine, acetate of morphia, or any other of the well-known preservatives. As the collodio-bromide plates are very transparent, it is advisable to back the glass with yellow or black pigment (such as a mixture of lamp black, or dextrine), as in this way any reflection is prevented, and blurring of the plate provided against. Before development the pigment is removed by a wet sponge.

4. *Development*.—After exposure in the camera, the film is softened by pouring over a mixture of equal parts of alcohol and water. As much water as is necessary to cover the plate is put into a developing cup with a few drops of a fifteen per cent. solution of pyrogallie acid, as also a drop of a ten per cent. solution of carbonate of ammonia in water. When the image begins to appear, a little more of the pyrogallie and ammonia solutions are added until the details in the shadows are perfectly apparent. If the picture is not dense enough, it is intensified with silver and pyrogallie acid as if it were a tannin plate. If the shadows are a long time coming, more pyrogallie acid than alkali is added to the developer; if the exposure has been too great, then the amount of alkali is increased. A ten per cent. bromide of potassium solution in water will be found instrumental in preventing the fogging of the image.

## TWO PHOTO-ENGRAVING METHODS.\*

The transformation of a photograph into an engraving block, from which engravings may be produced, is one of the great problems of the art; and upon this subject M. Gourdon has recently made some interesting researches.

\* *Année Scientifique*.

His observations are based upon a result discovered by M. Merget. This physicist found that zinc, when covered by a precipitated metal, is not open to the attack of dilute nitric acid, except in those places where it is bare; whilst, on the other hand, sulphuric, hydrochloric, and acetic acids, in a dilute form, only attack those portions covered by the foreign metal.

When covered up by certain metals, zinc alters with the greatest facility. If a sheet of zinc be coated in places with a film of pulverulent platinum, a film which may be produced by simply writing upon the plate with a solution of bichloride of platinum, the zinc will be open to the attack of sulphuric acid, diluted with seven thousand volumes of water, in those places where it is covered with platinum. If the latter be replaced by gold, the zinc may be dissolved by sulphuric acid diluted with 5,000 volumes of water. Then comes silver 3,500 volumes, tin 1,500 volumes, antimony 700 volumes, bismuth 500 volumes, lead 400 volumes.

Cobalt, nickel, and iron behave like platinum. Cobalt will determine the solution of iron in sulphuric acid diluted with 10,000 volumes of water.

The salts of the same base with different acids do not act in the same way. The chlorides give more energetic deposits than the sulphates, and these produce again stronger ones than the nitrates. Salts which produce no deposit, employed pure, furnish very active ones when they are treated with ammonia. Zinc covered with a metallic deposit is easily attacked, not only by acids, but also by alkalies in solution.

The presence of electricity is not sufficient of itself to explain these phenomena. Another cause, the porosity of the zinc, which is increased wherever active salts are placed upon its surface, must not be overlooked.

It is by taking advantage of some of these reactions that M. Gourdon has been enabled to elaborate two processes of helio-engraving, transferring a photograph into an engraved plate.

The first of the processes is the following:—In an ordinary photograph the image is produced by the deposition upon the paper of metallic silver. If we suppose a photographic print to be applied to a zinc plate, the silver transported from the paper to the plate, a metallic film will be produced, which will determine the etching of the zinc by an acidulated liquid. M. Gourdon employs cyanide of potassium to transfer the image to the plate. The paper print, on coming out of the printing frame, is plunged into a solution of hyposulphite of soda, and then carefully washed; it is then applied, face downwards, to the surface of the zinc. It is first moistened with ammonia, and a few moments afterwards with a solution of cyanide of potassium, either pure or mixed with carbonate of soda. After a time the silver will be entirely transferred from the paper to the zinc. This is accomplished with such uniformity that the metal bears exactly the same impression as that which was first fixed upon the paper. The plate is then etched with dilute acid, and the printing block is finished.

The second process is founded upon the property possessed by certain compounds employed in pigment or enamel printing to remain dry when sheltered from light, and to become hygroscopic if exposed to the sun's rays. These compounds are first spread upon paper; the portions which have become moist after exposure to light behind a positive or negative are then capable of retaining a powder sprinkled or brushed over the surface. This powder consists of certain metallic salts in a fine state of division, choice being made as to the kind of metal selected, according to the chemical reactions which have already been recorded by M. Merget as above described. The image covered with a saline powder is applied to the zinc by means of ammonia in vapour or in liquid. The image afterwards etched with dilute sulphuric acid gives, as in the former case, an engraved plate, from which engravings may be pulled by means of fatty ink.



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## PHOTOGRAPHIC ENAMELLING PROCESSES.

THERE is, probably, no branch of photography producing results of such high excellence, which has made so little headway with the mass of photographers, as that devoted to the production of ceramic photographs. A fine photographic enamel is, as a rule, an embodiment of all that can be desired in a photograph. It possesses the delicacy of the Daguerreotype with the vigour of a paper print, and a peculiar softness without loss of definition, and a pearly tenderness in the minor lights rarely found in any other picture. And it is not only permanent, but indestructible, unless, indeed, it be crushed under a hammer, or melted in a furnace. And yet, although modes of producing such charming portraits have existed for nearly twenty years, the art is still in its infancy, and those who undertake its study may be counted by tens instead of tens of thousands.

The paper read by Herr Obernetter before the Vienna Society, which we print on another page, will aid in smoothing the way of many who have failed in producing perfectly satisfactory results with the powder process. As our readers know, there are three distinct methods of producing photographic enamels which have scarcely anything in common with each other. The three processes are—the tissue process, the conversion process, and the powder process. The tissue process consists in preparing a tissue like carbon tissue, using a ceramic powder in place of carbon or other pigment. It was suggested in our pages soon after the publication of Mr. Swan's process. A few years later Mr. Firling worked the process out, and we described the results in these pages. It has, however, never come into practice, and a few months ago it was re-discovered, and described as a novelty. The powder process is, in many respects, the most easy method of the three; it is more essentially mechanical than the others, and, in some respects, more completely under control than the others. And yet it is much less practised than the conversion process. We do not at the present moment know a single photographer in this country who practises the powder process, whilst there are perhaps a dozen practising the conversion process. The fact appears to be this: although there are many uncertainties in the conversion process, the results, when perfect success is attained, are infinitely finer than any other. It is not difficult, as a rule, to distinguish by which process an enamel has been produced. The image produced by the powder process rarely possesses the delicacy of that produced by the conversion process. There is a certain dull opaqueness in

the shadows, and at times a granular quality in the deposit, which contrasts very unfavourably with the translucent delicacy obtained by the other process. Whether equally good results can be produced by each process we cannot say, for profound secrecy is preserved by some of those who produce the finest results; but we believe that the most successful men use the conversion process.

Besides being inferior in delicacy, a variety of minor difficulties have beset the powder process, arising from the presence of the chromic salt. These difficulties Herr Obernetter has overcome, and as some of his results, which we saw some time ago, were exceedingly fine, we commend his paper to the careful consideration of those interested in producing enamels. In the powder process there are two or three advantages of the utmost importance. In the first place there is more complete control over the tone of the picture than in the conversion process. In the latter there is generally more or less uncertainty of the precise tone a picture will possess after it is burnt. In the powder process, if a suitable ceramic pigment has been chosen, it will generally burn to the precise tint for which it has been selected. The presence of chromic salt used to interfere somewhat in this matter, but, according to Herr Obernetter, this trouble need not be encountered again. The greatest advantage possessed by the powder process consists in the control which the operator possesses over the character of the picture, in applying the powder in greater or less proportion upon different parts of the image.

So far as we can see, also, the powder process should be most suitable for enamels for colouring. As a rule, a highly-finished enamel miniature undergoes several firings, and it is customary to apply those colours which require the greatest heat in firing first, and those which vitrify with a lower heat in regular succession, the heat at each successive firing being lower, so that the colours already applied are not affected by each fresh firing. With enamels produced by the conversion process this at times involves a difficulty, as it may be that some of the colours may require a higher heat than that at which the photographic image was fired. Yet some of the finest coloured photographic enamels we have seen are produced upon images by the conversion process. Mr. Lee, of Cardiff, recently patented a method of producing these pictures. The specification does not seem quite clear as to the point protected, but the method is clearly a conversion process. Whatever may be the point of the patent, the method employed is manifestly a good one, and the personal skill very great. The colouring is rich, brilliant, and natural; and as commissions are undertaken to place such personal skill at the service of photographers, the method is of less consequence.

As regards the early history of enamel photography, Herr Obernetter is scarcely accurate. He accredits the powder process to Mr. J. Wyard, in 1860. In April of 1860 a paper by that gentleman on the powder process was read at a meeting of the Photographic Society. But some months previous to that a similar process had been specified by Mr. Joubert at the English Patent Office, the process being the joint discovery of himself and M. Garnier some months before that in France. But it is very probable that M. Lafon de Camarsac knew the process several years earlier. In a paper in the *Comptes Rendus*, in 1855, upon enamel photography, written, apparently of set purpose, in vague and general terms, he refers to the production of a sticky image, to which enamel colours are applied, which adhere in due gradation. In like manner allusions are made which indicate a knowledge of the conversion process. How early attempts were made to burn in or seal up the ordinary photographic image by means of a vitreous varnish we are uncertain; but Mayall, Malone, Tunny, McCraw, Barnes, Scaife, Forrest, and others all experimented in this direction. The first successful conversion process appears to have been that of



MM. Marechal and Tessie du Motay, who patented a process in 1861, by which the silver image was treated with different toning solutions, platinum and gold being employed to produce a black tone after burning in the muffle. A couple of years later Herr Grune patented a similar method, but extending materially the number of metals and metallic oxides into which the image could be converted, or which might be deposited upon the image so as to produce different tones in the photograph after firing. Platinum, palladium, iridium, gold, iron, uranium, manganese, singly or in combination, were used, and it is from the publication of Grune's process that conversion processes may date their practical rise and progress. Since their invention there has been none in connection with the process, although the marvellous advance in results has been due to modifications and improvements in formula and manipulations. A week or two ago Mr. Watson wrote to us, complaining that his formula, sold under pledge of secrecy, was published without any recognition of the "inventor;" and this week a correspondent writes to ask if, having purchased a secret formula under pledge of secrecy, he has any remedy when the vendor of such secret formula openly publishes it. In each case there is, doubtless, a breach of contract; but it does not concern us to comment on the matter. The sale of a formula or method which has been arrived at by careful experiment is, doubtless, perfectly legitimate; but it is equally doubtless that it is beset with risks which must be accepted as a part of the bargain. And, as a rule, the vendor of a secret must content himself with such solid pudding as he may secure, credit of any kind, even if he really be an inventor, rarely accruing to the vendor of a secret. The novelty in Mr. Watson's case appears to consist in the use of a mixture of the chlorides of iridium and gold for toning the image. As such a mixture produces a fine tone not easily otherwise attained, it constitutes a decided improvement and good saleable formula; but it has no claim to invention. Ten years ago we referred to the use of a mixture of the chlorides of iridium and gold in toning prints; Tessie du Motay used a mixture of the chlorides of platinum and gold for toning enamels; and Grune refers to the use of iridium, gold, and other metals, singly and in combination. Mr. Watson's formula is, we believe, a good one, and we think that it aided various experimentalists as one of the stepping-stones to success; but it is important to distinguish between working out a good formula with materials already known and used for the purpose in question, and originating a new process so as to give a claim to the credit of invention or discovery.

#### A NEW NEGATIVE PROCESS.

THINGS of an extraordinary new negative process reach us from Japan. A German gentleman named Hammenstede, dating from Yokohama, issues a circular announcing his discovery of a new negative process, for which he makes very remarkable claims. It yields, he states, infallible results, all the defects of negatives hitherto met with, being eliminated, and no silver bath is needed. The preparation used will keep good for years, is not affected by climate, and may be used to the very last drop. Dry plates prepared with the new material keep good for years. The exposure is more rapid than with the most rapid wet collodion plates; the cost is less than in the ordinary process, and it is more simple in manipulation than the ordinary process. Such, with some other minor advantages, are the claims made for this new process, the nature or details of which are not indicated further—except, indeed, negatively, for we are informed that bromo-uranium collodion is not employed.

These claims are startling enough, and, by way of verification, two ten by eight specimens are enclosed, the portrait, it is stated, having been taken with an exposure of ten seconds in the studio, and the landscape in seven

seconds. The quality of each is beyond a question very admirable indeed. At once brilliant and soft, delicate and forcible, with a degree of gradation, there is no trace of feebleness, flatness, fog, or lack of force, on the one hand, nor of hardness, crudeness, or lack of the finest gradation or half-tone. We should have judged the prints to have been produced from very perfect wet collodion negatives. The originator, finding Japan too narrow a field for such a process, is anxious to sell it in Europe. And—here is something which seems like a joke, but is manifestly serious and earnest—if any one is disposed to enter into negotiations, and will go to Japan to see Herr Hammenstede, that gentleman will undertake to indemnify him for the cost of the journey out and home again if the experiments do not correspond with the programme from which we have quoted! Those of our readers who desire a trip to Japan can scarcely hesitate in availing themselves of this rare opportunity!

#### THE VOIGTLANDER MEDALS

THE prospectus relating to these medals has just been issued by the Vienna Photographic Society, which intends to offer three silver medals for competition during the present year, and one gold medal for 1875. Should, however, any discovery, improvement, or scientific research of value be communicated to the Society, or to their organ, the *Photographische Correspondenz*, which may be held worthy of such distinction, other medals of gold, silver, or bronze may be awarded to the author.

The gold medal for 1875 is offered for a trustworthy and sensitive dry plate process. Not less than three negatives measuring 26 by 32 centimetres must be submitted by the competitor, one of a landscape, one of an interior without top-light, and the third one of an architectural subject. Moreover, twelve prepared plates must be forwarded, together with any information of importance, such as the preparation of the collodion, &c.

One silver medal will be given for studies from nature, taken especially to aid the painter. (Portrait studies are not eligible.) If the studies are from animals they must be not less than cabinet size; others must measure 21 by 26 centimetres. The series must number twelve pictures, and duplicate impressions must be sent, together with one negative.

One silver medal will be given for instantaneous stereoscopic pictures, not less than a dozen in the series; duplicate impressions and one negative must be sent.

The third silver medal will be awarded for a series of sixty lantern slides about the size of stereoscopic pictures. The prices of these slides should be given, and the Society reserves to itself the right of purchasing some of them at the prices named.

For the gold medal, competitors must send in their work not later than 1st of March, 1875, to Dr. E. Hoinig, III Hauptstrasse 9, Vienna, the parcel to bear a device or motto, which is to be repeated with the name of the competitor, contained in a sealed envelope. For the silver medals competitors must send in not later than the end of October of the present year. Competitors must qualify for the competition by becoming members of the Vienna Photographic Society.

#### THE AUSTRIAN ORDNANCE SURVEY.

IN *Meyer's Journal* we read an account of the Austrian Ordnance Survey Office, which employs photography largely in the production of maps and plans. By the aid of the camera the expense attendant on copper-plate engraving and lithography is, to a great extent, dispensed with, the main advantages of photography being rapidity of production, and economy. The original drawing must, in the first place, be executed with more care, it is true, and with greater precision, than in the case where the map is afterwards to be engraved, or lithographed; but, if this operation is a little more time-taking and costly, it



must be remembered that the subsequent processes are much simpler.

If the original drawing from which an engraving is to be made is estimated at one hundred florins, then the graving must be put down at not less than six hundred florins, making seven hundred in all. The drawing for photographing from may be set down at two hundred florins, taking the negative at ten florins (which is an outside sum), and the retouching at thirty or forty (the price of the metal plate is in both cases omitted), and we find that the new process costs but two hundred and fifty florins, against seven hundred on the other hand.

As regards the periods of time necessary in the production of these maps, we may state them as follows:—In engraving, the drawing would take six weeks, the graving six months (rather more than less), making together seven months and a half; in the case of photography, or photo-zincography, rather, the original drawing takes eight weeks, and the photographic retouching takes six weeks, altogether three months and a half. The advantage of employing photography is greater when deep, dark lines have to be produced, for these are very difficult of production by the graver, and take a long time to do; while, on the other hand, it is easier for the draughtsman to produce thick, heavy strokes than fine and delicate shading. The best and finest executed drawing of this kind would only cost hundreds, where the engraving would cost thousands, and it would take but as many months to produce as would be required years in the other case. The best proof of this is afforded by the map of Central Europe, which now consists of more than two hundred sheets, and which has been zincographed at the Survey Office, at Vienna, on a scale of 1:300,000. Thirty-five draughtsmen have been engaged for nearly six years in drawing this map, and it is now almost finished, while its reproduction is going on rapidly, so that the giant work is quickly approaching completion. If, however, all the maps had to be engraved upon copper, which would have necessitated the assistance of an army of artists, what an incalculable time would the work have taken, and what a terrible sum it would have cost!

As regards the technical production of these maps, it may be mentioned that all the finer lines, which are exceedingly difficult to mark with the pen, may simply be left out of the drawing, and sketched in afterwards in retouching with the graver. Things which are more easily engraved than drawn, and for which the engraver requires no original to copy from, are also omitted in the drawing, as it is not the intention of the authorities to abandon altogether the other graphical arts, but only to confine them within narrow limits, and, by employing the methods in combination with one another, to produce results of acknowledged excellence with a minimum expenditure of time and money.

#### FRENCH CORRESPONDENCE.

WHILST M. Leon Vidal continues his experiments with the heliochromic process, he has elaborated and is making considerable progress in the matter, as will be apparent at the next meeting of the French Photographie Society. M. Dueos du Haaron is also working to complete a method of heliochromy, the details of which he made known some years ago. The readers of the PHOTOGRAPHIC NEWS will no doubt remember that M. Dueos obtained some coloured pictures by passing the light through glasses differently tinted. To-day we have received from this diligent investigator a little pamphlet, in which he makes known some modifications made by him in the original process. I send you herewith a specimen of his work. The first method consists in producing:—

a. Three negatives in the camera of the same object: the first through the medium of green glass, the second through the medium of blue glass, and the third through orange glass.

b. To obtain by pigment printing, or similar methods, such as chromo-photography, Woodburytype, &c., a red image with the first negative, a yellow image with the second, and a blue image with the third; these three images superposed one above the other constituting together the finished heliochromic image. Among the difficulties which the operator has to encounter is the great duration of the pose necessary to obtain the clichés in the camera through the medium of the orange and green glass, and the extreme intensifying required in these cases. His more recent experiments have served to diminish considerably the exposure of the negative furnished by the red and green light, by employing a collodion which does not differ very much from that generally used, viz., iodised collodion *à la coralline*, and substituting glass for the paper for the clichés he requires.

Experiments made by M. Dueos show that the iodized collodion coloured with coralline is still more sensitive to red light than the bromised coralline collodion referred to by Dr. Vogel. The rapidity of impression is still greater in the case of the green and yellow light. As to the blue light, or violet, this impresses the collodion instantaneously.

These are results which will interest all photographers beyond the connection in which they were obtained, for they will be of veritable importance in the reproduction of paintings, and in more accurately representing all that which contributes to make a harmonious picture, and which is often lost in the photographic copy of a painting.

I have received from a provincial photographer, M. Thierrée, fils, of Bresles, the details of a printing process which is very economical, and which at the same time furnishes very fine prints, the permanence of which the author believes to be guaranteed. The basis of the process is the simultaneous coagulation and sensitizing of the albumen, and to effect this the silver bath is thus compounded, viz.:—

Distilled water	...	...	80 cub. cents.
Crystallized nitrate of silver	...	...	12 grammes
Alcohol at 40° C.	...	...	20 cub. cents.

The paper is floated upon this solution, and allowed to remain in contact with the liquid for three or four minutes. Raising one of the corners with the left hand, and holding in the right a glass rod, the face of the albumenized paper is freed from the excess of liquid by passing it over the rod two or three times. The superfluous solution falls into the bath, and the paper is suspended to dry, an event which soon takes place after the paper has been thus drained, for a quarter of the moisture hanging to the surface consists of alcohol. Among other advantages, the use of a rod has the effect of restoring to the bath an important quantity of solution, and thus maintaining the standard of its volume and quality for a longer period.

The bath is of twelve per cent. strength to begin with, although this is not absolutely necessary, and it is employed until it has fallen to five per cent., after which it is brought back to its primitive strength. It also receives an addition of alcohol from time to time, according as the operator may deem the same necessary, judging from the odour it exhales. In any case, whether the bath is of twelve or five per cent. strength, the pictures have the same intensity, and the same rich tone and brilliancy, provided there is sufficient alcohol, and the amount of the same is greater when the bath is weaker.

M. Thierrée assures me that never, even in very hot weather, does the bath become discoloured, the coagulation of the albumen being complete. There is no need, therefore, to fear the advent of sulphur in the silver bath. The latter may be retained at a very low degree of strength—five or six per cent.—and will still yield prints of an irreproachable character. This minimum of silver is amply sufficient to transform into chloride of silver the salt mixed with the albumen, and to convert a portion of the latter into albumenate of silver. Finally, the paper,



freed from the greater portion of the nitrate which is usually left upon its surface, will keep white for a considerable period. In fact, the albumen, being rapidly coagulated by contact with the sensitizing liquid, becomes less permeable, and protects the body of the paper and the sizing of it.

The economy resulting from this process is considerable. To print five thousand cartes-de-visite, and five hundred prints, whole plate size (taking into account sheets lost, and bad impressions), our correspondent employed two hundred and seventy-six whole sheets of paper, and used but two hundred and eighty-nine grammes of nitrate of silver, being at the rate of 1.05 gramme per sheet. If he had employed instead a bath of fifteen per cent. strength, without the aid of a glass rod to drain the sheets, he would have been compelled to maintain it at a strength of twelve or thirteen per cent., and the proportion of silver absorbed by each sheet would have amounted to about three grammes. As much, therefore, as eight hundred and twenty-eight grammes would have been necessary of nitrate in this case, instead of two hundred and eighty-nine. This proves that, with the addition of alcohol, we may allow the strength of the bath to fall very considerably without inconvenience; but it must be remembered that, there being less silver in the paper, there will be very much less found in the washings and in the residues.

To resume: the advantages which M. Thierry claims in favour of his process are the following:—Consolidation of the albumen film, which is the true basis of the image; maintenance of the volume of the bath and its state of purity; rapid desiccation and long preservation of the paper; and economy in the use of silver.

Some attention has lately been given to the action of hydrogen, pure or mixed, upon nitrate of silver. M. Pellet, who has made some experiments upon the same subject, has just communicated the results to the Academy of Sciences in a memoir, of which the following is a brief summary:—

Firstly. A solution of neutral or slightly acid nitrate of silver is not reduced by pure hydrogen in a cold state.

Secondly. Alkaline nitrate of silver undergoes, when cold, an incipient reduction in proportion to its alkalinity, and an elevation of temperature accelerates the reducing action.

Thirdly. Hydrogen is without any action upon a solution of acid nitrate of silver, whether cold or warm.

Fourthly. Nitrite of silver cannot exist in the presence of nitric acid, especially in a warm state.

ERNEST LACAN.

#### A TOBACCO PRESERVATIVE FOR DRY PLATES.

MR. W. H. WATSON informs us that he has had considerable success in using tobacco as a preservative. He adds:—

"I have placed the formula in the hands of a friend—an amateur—and he tells me he is going to adopt it in preference to others which he has tried. I subjoin the formula for preservative herewith, which will keep for some time after preparation:—

Tobacco	...	...	...	20 grains
Gum arabic	...	...	...	10 "
Water	...	...	...	1 ounce

Boil the tobacco in the water, which you will find to make a saturated solution, and on cooling to throw down a portion of the soluble matter out of solution. Filter, and in the filtrate dissolve the gum. I have found tobacco *per se* to give good results, but prefer to add the gum when the plates are to be kept for some time."

#### A NEW PHOTOGRAPHIC PAPER.\*

WHILE in former days excellent paper for photographic purposes was produced by at least seven or eight factories, at the present day we are dependent upon two manu-

facturers alone, for it is well known that Messrs. Steinbach and Co. (of Malmedy) and Blanchet Bros. (of Rives) now supply nearly all the raw paper required by photographers. The last named firm, whose paper is much sought after, but who, of late, have been troubled with defects in sizing, and metallic spots, has recently undertaken the manufacture of a raw paper, which if the price is not too high, should be deemed faultless. To distinguish it from the ordinary Rive paper, which will be manufactured as before, the new paper carries a watermark of three stars, and it will be prepared of similar weight, viz., from sixteen to twenty pounds per ream. The sheets are exceedingly clean, and of a very homogeneous texture. We have desired Dr. Schnauss to submit the material to chemical examination, and the results of his investigation we here annex.

#### EXAMINATION OF THE NEW RAW PAPER OF BLANCHET FRERES ET KLEBER, OF RIVES.

(1). Treated with iodine water, it became uniformly blue, and maintained this colour for a long time, a proof of the absence of  $\text{SO}_2$  and  $\text{S}_2\text{O}_2$  salts (sulphurous and hyposulphurous salts).

(2). *Test for the sizing*.—Treated with ether which had previously been shaken with  $\text{SO}_3$  (sulphuric acid), and then dried, the paper allowed moisture to pass through, a proof of the vegetable character of the sizing (resinous soap).

(3). *Ashes*.—The paper leaves behind a rather large amount of white ash, which has a strong alkaline reaction. Water does not dissolve it to any extent; dilute acid dissolves it partially, with the development of gas. The residue is silicic acid; the muriatic acid solution contains, besides traces of  $\text{Fe}_2\text{O}_3$ , almost nothing but  $\text{CaO}$ , which was found in the ash in the form of sulphate of calcium. Curiously enough, no trace of alumina could be found, although in the sizing of the paper alum is employed.

(4). *Behaviour of the paper as regards the action of the silver upon the sizing*.—This is, of course, the most important point of the investigation, and the sizing must especially be taken into consideration, for the inorganic properties of the paper, as also the pure cellulose, may be considered to be without any action upon the silver solution.

To remove the sizing (resinous soap) the paper was digested for some time in water containing a little  $\text{NaO}$ , and the solution was then filtered and carefully evaporated. A part of the filtrate was accurately neutralised with  $\text{NO}_3$ , and there were separated flakes of resinous acid, and then a few drops of silver solution were added in the dark. A whitish precipitate was at once formed, which soon changed to a yellowish-white. After a few days' preservation in the dark the tint became of a dark flesh colour. The paper itself behaved in the same way in contact with silver solution. It was dipped into silver solution for some minutes, and preserved sheltered from the light, but with access to the air. Very soon it became of a brownish-yellow tint, which gradually darkened. The freshly-silvered paper, exposed to sunlight for a few hours, does not change its white colour, a sign that the browning is due to a decomposition, in a moist atmosphere, taking place between the sizing and the silver solution. As soon as this occurs the silvered paper becomes more sensitive to light. If protected from the access of light, and neither dried by means of hygroscopic bodies nor artificial warmth, the silvered paper keeps for an almost indefinite time undecomposed, as, for instance, in a corked bottle or capsuled vessel. In the same way, also, does the silvered albumenized paper behave if likewise kept from the light.

(5). A muriatic acid digest of the unburnt paper was also carefully examined by way of control experiment, and again traces of  $\text{SO}_3$ ,  $\text{Fe}_2\text{O}_3$ , and much  $\text{CaO}$  was found, but no alumina; the sulphuric acid and iron were due, probably, to the bleaching agent employed, and the iron rollers used in the manufacture. Metallic iron particles, which cause metallic spots, were not present.

\* *Photographisches Archiv*.



## ON THE APPLICATION OF THE POWDER PROCESS IN PHOTOGRAPHY.

BY J. B. OBERNETTER \*

So far as I am aware, Mr. J. Wyard, of London,† was the first who, in 1860, made use of the powder process to produce pictures upon enamel, and burnt them in upon glass and English porcelain. Joubert, Lafon de Camarsac, and Poitevin all worked in a similar direction. In the London International Exhibition of 1862 Lafon de Camarsac exhibited several enamel brooches, as also a porcelain cup upon which photographs had been burnt. The novelty of these objects impelled me to make some experiments in the matter, and these at once convinced me that the subject was one which would repay investigation.

From the year 1862 down to the present moment I have occupied myself with the powder process, and, as is well known, have practised it with some success. The fact that my communication on the subject of reproducing negatives has met with approval has induced me to publish in the *Photographische Correspondenz* the details of my researches in this direction. I trust that the high degree of success which has attended my efforts may move others to adopt the process, and further contribute to its value.

In the early days very little was known of the various methods experimented with, and it was only by private correspondence that I was enabled to obtain any information respecting the work of the gentlemen above named. I continued my experiments systematically, and within a year I had elaborated a method which worked in a most perfect and trustworthy manner. Many processes have been published from time to time, up to the present day, of the modes of producing enamel photographs. If we look closely into these methods we find scarcely any difference among them, but there are the same defects in all of them, rendering sure and certain success impossible; these defects have been carried down to the present day, and appear in the most recent processes published.

Till now it has been the custom to prepare a mixture of bichromate salts and some organic body, such as albumen, gum, dextrine, gelatine, sugar, &c., and to pour a thin solution of this solution upon glass, paper, or porcelain; the film was rendered partly insoluble by exposure under a positive picture, and dusted over with fine enamel powder, which adhered only to those portions of the surface where the light has not impinged upon it, and this dusting of the image, so to speak, develops the picture. Whether the picture was transferred by means of collodion, or whether it remained upon its original basis, it was invariably washed with acid to free it from the superfluous bichromate contained in it. The employment of an acid to get rid of the chromium salt is, however, the sole reason why all hitherto published methods have given unsatisfactory results, for under these circumstances the enamel pigments employed never possess an agreeable tone, and do not attain a brilliant gloss when burnt in upon the porcelain. My first experiment showed me that the cause of matt discoloured pictures was due to a chemical change which the pigments employed had undergone. The composition of the enamel employed is well known, and I submitted a sample of it to the action of the agents employed in the process, and then prepared a picture with the powder for comparison with another image burnt in with enamel pigment which had not been acted upon. The result of my experiment was as follows:—

Water and organic bodies, such as gum, albumen, &c., are without any action. Enamel pigment treated with these, and then washed, come out of the furnace like normal colours. The chromic salts destroy the lead in the colours forming chromate of lead. If the colour is treated with an excess of a solution of bichromate, the whole of the lead compound in the pigment is decomposed, and, instead of the original important flux, the enamel contains

chromate of lead. This latter, when burnt in, possesses no gloss; but if, to such a pigment containing chromic acid, some fresh flux is added, then the former recovers its original tone and brilliancy. This result is obtained when the action of the chromic acid has been but very brief, and the chrome salt is not a simple chromate, but rather an alkaline salt. The change of colour may therefore be avoided by the addition of more flux, thus preventing the action of an acid chromate salt upon the pigment. If the enamel pigment is treated with any acid, then the whole of the flux is decomposed, the metallic oxides, which form the colouring matter, being partially dissolved and changed; the colour loses its tone and brilliancy, and it is no longer an enamel pigment, but a mixture of difficultly soluble metallic oxides, such, for instance, as the oxides of copper, cobalt, &c.

In all processes hitherto published it is recommended to immerse the powder image in dilute acid, or to wash it with the same, so that the excess of bichromate salt may be dissolved away, and the obnoxious compound and tint in this way removed; but, as I have already shown, the dullness of the image and the bad colour of the burnt-in image are to be ascribed solely to the action of the acid upon the picture.

The remedy is obvious: if, instead of an acid, we have recourse to an alkali solution, this neutralises, on washing, the bichromate salt, and acts as a solvent upon any chromate of lead that may have been formed; at the same time it does not attack either the metallic oxides or the flux. Enamel pigments do not suffer any change on being exposed to the action of dilute alkali, or soda solution. These simple experiments I made ten years ago, and they were the cause of my success in working the process. Those who have experimented with the method, and have abandoned it from vexation due to their ill-success, should try once more, and, instead of an acid, employ potash or soda solution for washing. The result will be sure to repay one.

All published methods are at once practical if only the word acid is struck out. I am firmly convinced that all those who at the Vienna Exhibition exhibited such beautiful enamel photographs employed an alkaline for washing out the chromium salts. And if I cannot prove that I am the first, directly or indirectly, to discover this matter, I will, at any rate, be the first to publish it for the good of all.

It is unnecessary for me to speak of the proportions of the sensitive solution. Gum, dextrine, albumen, or gelatine, combined with more or less sugar, to which eight or ten per cent. of bichromate of ammonia are added, and water in sufficient quantity, always give results of some kind. I employ the simplest and the most uniform kind of preparation for porcelain pictures, viz., gum or grape sugar, and by adding glycerine, correct the solution according to the degree of moisture in the air at the time being. This latter operation is the most difficult of all. Only practice and experience can here indicate the proper course to pursue.

Many take the trouble to prepare the solutions in the dark, and to coat their plates in the dark, and apply the powder in the dark also. Irrespective of the fact that a solution in light does not lose its good qualities, the dry plate, it may be stated, does not suffer by being exposed for a short time, such as suffices for the placing of the film in the printing frame and applying the powder to the action of daylight. All my porcelain and glass pictures are produced in the ordinary working room of my studio. These remarks on the production of photo-enamels are, of course, only supplementary to the details of processes already known and practised.

Those who have worked the powder process will have become aware of many possible applications of it. At the time I was producing my porcelain pictures they were making in Paris the beautiful glass stereoscopic slides. Pictures of this kind I employed as positives for the

\* Read before the Vienna Photographic Society.

† See remarks on another page.



production of burnt-in photographs upon cups, saucers, &c. These stereoscopic pictures were not varnished, and were, for the most part, upon very thin glass, and easily injured. My plan of proceeding was to prepare a sensitive solution of—

Gelatine ... ..	1 gramme
Gum ... ..	2 grammes
Sugar ... ..	8 „
Bichromate of ammonia ... ..	4 „
Water ... ..	150 „

and with this a glass plate was coated. The film, when dry, was exposed under one of these stereoscopic slides, and then finely divided silver was dusted on, the powder being produced by precipitating a dilute solution of nitrate of silver with acid sulphate of iron solution. The more dilute the solution the finer is the precipitate formed; but washing the precipitate, filtering, and drying it, is a tedious and costly operation. I therefore sought for some other finely divided and innocuous matter, experimenting with oxides of iron, clays, &c., until at last, in graphite, I found a body which seemed to answer every necessary condition, and which, moreover, was not a costly commodity. When I had secured a picture of sufficient vigour upon the plate, I washed it by simply pouring over it a mixture of nitric acid, alcohol, and water, in equal parts, thus eliminating the sugar and the chromium salt. In this way I prepared several positives upon uniformly thick glass, cut them accurately with a diamond to the proper dimensions, and was able in this way to print six or more pictures upon porcelain plates. These positives were all reversed, and yielded, therefore, upon porcelain prints in their proper sense. It would have been just as easy for me at that time to have reproduced negatives, but as such work was not then necessary in my business, and no demand existed for reproduced negatives, I paid no attention to the subject.

Another very interesting experiment is the following. A copper, zinc, or glass plate is coated with a syrupy solution made up of—

Gelatine ... ..	10 grammes
Glycerine ... ..	2 „
Bichromate of ammonia ... ..	4 „
Water ... ..	50 „

When this has dried upon the surface of the metal or glass, it is put under a reversed negative and exposed to light. After printing it is sprinkled with fine zinc powder, and if the plate is desired perfectly flat, one pauses in the operation as soon as the picture appears as a positive by reflected light. If, however, a deeper typographical image is desired, then the plate is breathed upon and dusted so long with zinc powder until the latter has penetrated deeply the unexposed portions of the plate. When glass plates are being used, the operation may be viewed and controlled by transmitted light, but with copper plates the depth of the engraving can only be estimated with the eye as nearly as possible. When the plate is sufficiently powdered, it is washed with water to get rid of a portion of the chromium salt until the rinsing water runs off of a lemon colour, and then the plate is allowed to dry spontaneously. The not quite wholly removed chromium salt suffices to render the whole of the gelatine surface insoluble by long exposure of the plate to light, or by heating to about 150° Centigrade. When, by one operation or the other, the film has been made insoluble, then the surface of the plate is etched by means of dilute muriatic acid. The zinc is dissolved, and the hydrogen formed combines *in statu nascenti* with the insoluble gelatine in contact with it, and renders the latter again soluble.

By moistening with water, the image may be printed from in the same way as a lithographic stone. If a relief is desired, then the whole plate is washed with hot water; as deep as the zinc has penetrated by powdering, so deeply is the gelatine dissolved, and the relief produced. Unfortunately, the half-tones are also deep in this case, and therefore the method is only applicable for reproductions

of line drawings, but these are copied with a sharpness unknown in other processes.

I believe it to be possible to prepare printer's blocks in this way for the printing press. My first pictures in the printing press were thus produced, and in larger editions from one plate I even now have recourse to this method, especially when the subjects present sharp outlines, such as maps, plans, &c.

Unfortunately, I must warn photographers of taking up this class of work, for the zinc powder with which one has to operate is very injurious to health when breathed into the lungs. Half a day's work with the powder produces a metallic taste in the mouth, loss of appetite, &c. It is possible partially to guard against breathing in the dust, but everything that keeps off the dust also prevents one from breathing upon the plates, which is indispensable in working the process. Nevertheless, two or three plates may be prepared daily without personal injury.

These are my most interesting experiences of the employment of the powder process with bichromate salts. In my next communication I will treat of the powder process with iron and other metallic oxides as the sensitive bodies. As in these bodies a suboxide is formed on reduction of the oxide by the action of light, and the former is more hygroscopic than the latter, the contrary result is produced as when the bichromate salts are employed in copying a negative, for in the former case a positive picture of similar beauty is obtained.

## Correspondence.

### IMPEDIMENTA OF THE MAGIC LANTERN.

DEAR SIR,—Allow me to express my surprise and regret that a critical remark made by me in my article upon the "Impedimenta of the Magic Lantern," although just, has unintentionally caused Mr. Nicol to feel so sore. I believe I have had as much practical experience as falls to the lot of many, still I have no ambition to be styled a mechanic, therefore the declamatory effusion of Mr. Nicol does not affect me, as he does not defend his project; and as it has no doubt been smartly criticised by the clique, I will, in Scotch parlance, let that flea stick by the wall. In Scotland, the old sugar-loaf form of weight may be still used, and I should have thought a quarter of a century's experience would have taught Mr. Nicol that if placed upon their sides, provided that the ledge of the pressure boards is properly constructed, they would lay perfectly safe, without the necessity of depriving him of all the gentlemanly appurtenances he possessed. In this part of the country, the block weight, having a bar handle, and the number of pounds it represents cast in figures upon its top, has quite superseded all other varieties, and Mr. Nicol, I am sure, would allow them to be the very thing required, and that there is no necessity for the iron bars he proposes, which, although they, upon occasion, prove excellent substitutes for kitchen poker or life preservers, would, I should imagine, prove dangerous, troublesome, and noisy cab companions.

I still hold to my opinion that the pressure boards constitute the chief impedimenta of the dissolving view apparatus. I am not aware of the size of that used by Mr. Nicol, but will describe my own. It consists of a pair of lanterns having four-inch condensers, with lamps, jets, tubing, and to light either with gas or oil as may be required. I carry about six dozen slides. All the above are contained in two boxes, measuring about 24 by 16 by 16 inches. My pressure boards, which are boxes, and carry the bags, are 43 by 32 by 6 inches, and weigh about fifty-six pounds each.

After giving these data, I need not point out to your readers the error under which Mr. Nicol labours when he asks what good it would be to do away with the latter unwieldy objects, and substitute in their place a pair of bags which, by a little alteration in the size of the above named boxes, could be packed in them, and conveniently carried either behind or on the top of a cab or by rail. That this is not a Utopian idea I think I can show. I will not dispute the universal ingenuity of Mr. A., but allow him to be capable of anything, from picking a lock—a dangerous accomplishment, by the bye—to taking an observation of the motions of the planets; but it is frequently the case that amateurs allow their imagination to outstrip their judgment, work without



a plan, and throw all caution aside. That this was the case with Mr. A.—and I should not think that he would thank Mr. Nicol for exposing it—is evident, otherwise he would have proved the success of his experiment by inflating his bags with common air, and noticing their action before venturing to use them at an exhibition. Had so clever a man as Mr. A. used his reasoning faculties, they would have told him that the resistance of any machine must be fully equal to any pressure to which it may have to submit, whether from within or without.

Mr. Nicol, being a Ph.D., will no doubt understand that if the heavy head of a man, together with the bones, shoulders, and arms, were unsupported by the spinal column, but allowed to press upon the lungs, unprotected by the ribs, the effect would be fatal, and somewhat similar to what happened to Mr. A.'s bags. In my hasty sketch, necessarily short, I reckoned on the good sense of your readers, and did not name them; but in all instruments of this kind they are a matter of necessity. As an example, I refer Mr. Nicol to the common kitchen bellows, which, if he requires ocular demonstration, he can cut open, and he will find that the ribs prevent their flexible parts being blown out like a bladder.

I cannot claim the idea of forming square gas bags to be used without pressure-boards as my own. They have for a long time been supplied by makers of empuence, and found to answer well. My proposition was only to remedy some of their inconveniences, and improve their appearance. I believe I may presume, without arrogance, to caution Mr. Nicol not to be too hasty in pointing a moral, otherwise he may, perchance, adorn a tale unconvincible.

While writing on this subject, I wish kindly to suggest to "Oxygen" that in his proposition to use water as a weight he has not taken into consideration that a pint of water weighs only one pound, and thus it would require fourteen gallons to equal 112 pounds, the weight required; bags made of sufficient size to hold such a quantity would be very costly and unwieldy; that the weight upon a pressure-board requires to be placed at that point where its pressure may have a tendency downwards and towards the top, otherwise the gas would not flow, and the bag might be burst; also, that water finds its own level: so that if an open tin case containing the proper quantity could be placed in a right position upon a full bag, the descent of the pressure-board caused by the emission of the gas would so alter matters that the water would be spilt, and, in all probability, the whole affair topple over on the floor.—I am, dear sir, yours truly.

5, Clarence Place, Ilfracombe, April 28th. J. MARTIN.

## Talk in the Studio.

**THE PHOTOGRAPHERS' BENEVOLENT SOCIETY.**—The Society has just issued a circular setting forth the advantages to be gained by joining. Photographic assistants would do well to give the subject their earnest attention. A copy of the circular may be obtained of the secretary, Mr. W. T. Wilkinson, 174, Fleet Street, E.C.

**CLEANING VARNISHED NEGATIVES.**—Mr. C. A. Palmer, writing to the *Philadelphia Photographer*, says:—"I have seen many ways of cleaning off varnished negatives, but of course like my way best, and as I have never found any one using it, except where I have taught them, I will give it for the benefit of all. I proceed as follows: I take my varnished negative and pour on it a little concentrated ammonia, rubbing it well over the surface; then setting it in a level place, pour a little more on the centre of the plate, and prepare another the same way; then lay the varnished sides together, and serve another the same way, and continue doing so till I have a dozen or two in the pile. Then set a weight on top and let them lay an hour or so, when the film will easily come off, and, after thorough rinsing, be ready for albuminizing. I cleaned and albuminized fifty quarter-glasses in a little over an hour a short time since. It is much the quickest, and I think the cleanest, method I have ever seen published."

## To Correspondents.

**DARTMOOR.**—A metal box for storing dry plates is in many respects best, but care is required not to leave on the plate any of the metallic particles rubbed from the groove by the edges of the glass. At one time a strong objection existed against wooden boxes for storing dry plates, especially if the wood were pine, as an impression prevailed to the effect that the resinous exhalations produced fog.

**ENAMELLIST.**—The question depends entirely upon the terms of the bargain. Of course, if you purchase a formula as a secret, it derives a portion of its commercial value from the fact that it is known only to a limited number, and such competition as it might aid is circumscribed. You are unquestionably to some extent damaged by the open publication, but unless some guarantee as to communication to a limited number only were entered into at the time you purchased, it does not seem that you have any remedy. Various patents for enamel processes have been taken, but there is none, we believe, in relation to the powder process now in force. Joubert's patent was taken in January, 1860, and is now expired. Some years ago another powder process was patented in this country, known as Leth's process, but we believe it was not kept up beyond the first three years.

**FERRI SULPH.**—We are not quite sure as to what you mean by the "receipt for a good enamel varnish for cartes." The enamel surface which is sometimes applied to cards is not a varnish at all, but a coating of gelatine and collodion, applied in the way we have often described. You will find it described in our last *YEAR-BOOK* on page 117. 2. The production of Rembrandt effects depends upon the lighting of the sitter. We have described the mode of proceeding repeatedly, and it would be impossible to repeat details in this column. All the light is covered up except a small space, near to which the sitter is placed; and reflected lights are secured by the aid of suitable screens. 3. It scarcely seems to us that the publication of births, deaths, and marriages amongst photographers would be of sufficient interest.

**TWELVE MONTHS.**—We should think that your first year's experience ought to be very encouraging, and we should recommend you to persevere, resolving to increase your business steadily. There appears to be every prospect of success. The saleable value of a business depends upon so many things that we cannot very well give even a rough estimate of the worth of yours.

**SIMPLEX VERITAS.**—Our answer was intended to imply that we had always believed that the method employed at Liverpool was one of several known methods, and that similar things had been done some time before. 2. Regarding the preservation of photographs by hermetically sealing them from atmospheric influences, it is probable that in many cases rapid fading would be avoided; but we believe that more photographs perish from the consequences of imperfect fixation than atmospheric influences. If a print be perfectly fixed and washed, it is probable that perfect protection from the atmosphere would preserve it from fading. There is not, and cannot be, any specific time laid down for the fixation of prints. The thickness and character of the paper, the amount of unchanged chloride of silver it contains, as well as the strength and temperature of the solution, materially modify the time. Sometimes five minutes may be sufficient, but, as a rule, from ten to fifteen minutes in summer, and from fifteen to twenty minutes in winter, have been found in practice to answer best for general use. Too long immersion is always undesirable. Our experience leaves no doubt whatever as to the improbability of photographers paying for the hint in question, and of course we have no hesitation in stating our conviction when we are asked. We shall have pleasure in publishing the details. We will return the cutting.

**G. F. L.** suggests that in printing life-size heads, whether from direct negatives or enlarged negatives, rough drawing paper should be employed instead of albumenized paper, the texture of the former being much more effective, he thinks. The suggestion has been made before, and is well worthy of attention.

**M. R.**—The poverty of tone of which you complain is more due to the imperfection of the negative than the toning bath. Your negative is apparently flat and weak, and without a good, vigorous image is obtained in the printing frame from a good negative, you cannot hope for a fine, rich tone in the gold bath.

**F. E.** writes to express regret at the turn of affairs in the Photographic Society, and to express his approval of our comments last week. He asks if it be absolutely certain that those identified with the origin of the agitation were again summoned to be ready for combined action? as, if this were really so, it was, he thinks, "a menace which in itself showed that the reconciliation was hollow, that it was, in fact, but an armed truce, and showed that the demon of distrust was still in the ascendant." If that were not so, "if no preparation of the kind, for opposition, existed, he thinks it was very unwise on the part of Mr. Glaisher not to make clear, in a conciliatory spirit, the difficulties in which the council were placed, as it would have been easy to show an impartial audience that reconciliation necessarily meant a restoration of the state of things before the quarrel." In any case, he adds, "an attempt to enforce conditions as a basis of reconciliation simply amounted to coercion, which it must have been clear to any one could not be acceded to." Finally, he asks: "Is every avenue of harmonious co-operation closed, or are there still means of securing agreement?" Candidly, we fear not. The best thing that can now be done, so far as we can see, will be to get a new code of rules out and a new general election by the entire suffrages of the society. We fear that further discussion of the question will now avail little, and we have therefore only given the chief points of our correspondent's long letter.

Several Correspondents in our next.



## The Photographic News, May 8, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHY ON THE STAGE—PHOTOGRAPHIC ILLUSTRATIONS—THE OBERNETTER REPRODUCTION PROCESS—THE PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

*Photographers on the Stage.*—Everybody expects to be parodied now-a-days, and the photographer is not likely to be exempted. It is surprising, indeed, that more advantage is not taken by our play-wrights and farce-writers of the incidents of a photographer's life, for many of them are especially calculated to promote, or mystify, the plot of a play. As we pointed out a little while ago, the few times in which photography has been seriously employed upon the stage to supply some proof, or afford necessary evidence, in bringing about the *dénouement*, as in the case of the *Octoroon*, and other pieces, so much ignorance is generally displayed upon the part of the authors, that in the eyes of a photographer the result is ludicrous in the extreme. The business between a photographer and his sitters, which one might imagine would form a capital basis for a humorous bit of acting, has only—in our experience, at any rate—been attempted once in this country, although we remember a very funny lecture given at the Crystal Palace by our famous comedian, Mr. Toole, who used to boast (not without some truth) that his glass-house was the biggest in the world; that his portraits were so large that instead of *plates* he had to use *dishes* for them; and that, although it was a difficult thing in photography to make a bath and "set a plate," you need not "sit up late" to do it. Mr. Toole always succeeds, whether he wants his audience to laugh or cry; but he is never more mirth-moving than when, with mock gravity, he takes to lecturing on chemical subjects, and expounds the vegetable nature of amber, which, he says, is not to be confounded with the Epsom salts of commerce, that is grown like mustard and cress upon a blacking bottle, and sold to the public as cyanide of potassium. The single instance we know of, of a farce having been made from the materials of a photographer's studio, was one written by the late John Brough, one of the most genial spirits that ever breathed, who, it will be remembered, made a reputation in science as editor of the *Laboratory*, and author of "Fairy Tales of Science," and was one, also, of the Brothers Brough, whose bright extravaganzas, in the days of Vestris and Robson, are not yet forgotten. There were only two actors in the farce, if we recollect rightly, and these assumed, one after the other, various guises, and represented oddities who came to sit for their portraits, and worry the poor photographer. The author created one rôle, and the present survivor of the four brothers, Lionel Brough, whose genuine humour every playgoer of to-day is familiar with, supported the other, so that the fun and merriment of the piece were fully developed. It was produced at the time when the song of "Old Dog Tray" was the rage, and those who remember something of the words of that popular ditty will see how well the sound of several phrases is imitated in the photographer's song, who, in introducing his sitters, sings:—

"From this heterogeneous crew I've picked out one or two,  
Who represent the nation, that we speak of every day.  
And these will clearly show that wherever we may go,  
We find subjects plenty to *pour-tray*.  
For old or grey, we're ever grateful,  
And object not to sitters young and gay,  
But we only show to you the portraits of a few  
Whose photographs are more *outré*."

*Photographic Illustrations.*—It is encouraging to see how surely, if a little tardily, photography is making its way as a means of illustrating contemporary literature. It is no novelty, of course, to see a book illustrated by photography, but those hitherto produced have, for the

most part, enjoyed but limited circulation, being put forward by their publishers more as tentative essays and experiments, rather than as commercial speculations to realise a profit. It is only during the last year or two that booksellers have seen their way to employing photography in competition with engraving, and an excellent example of what the art can do is afforded by the Princess Lichtenstein's work on Holland House, which is profusely illustrated by Woodburytypes. Another step is now being made, and we are right glad to find that a journal with so large a circulation as the *London Figaro* is giving its readers a photographic illustration every week, the price of the journal, together with the frontispiece, being but twopence. The first picture issued is a carte portrait of Madame Nilsson, by Pierre Petit, of Paris, which has been printed, we should think, by Messrs. Goupil, of Asnières, by the Woodbury, or as they term it, photoglyptique method. The carte is a charming production, and as well printed as a first-class silver picture, to which, on the score of permanence, it is of course vastly superior. Mounted on a card, its ordinary price would be a shilling, and yet the purchaser is asked but a fraction of twopence for it. The cost of production of these pictures, when an edition of forty or fifty thousand is required, is no doubt comparatively small, for in this case we must suppose that a margin for profit remains to the publisher. The appearance of a newspaper with a photographic illustration must be regarded, therefore, as a grand stride in commercial photography, proving as it does, the possibility of producing pictures of such excellence at so low a figure. By Lichtdruck, or Heliotype, photographs could doubtless also be obtained quite as economically; but even if possessed of the same delicacy and detail, they would scarcely be so brilliant, or approach so nearly a vigorous silver print, such as Madame Nilsson's portrait appears to be. In Paris an attempt was made a year ago to illustrate a theatrical journal in the same way as is now being carried out here; but although the enterprise continued for some time, and is, for aught we know, still being carried out, the circulation of the journal was not such as to command a great success. One grave drawback was the unsuitable mount presented by the thin, flimsy newspaper, which detracted very much from the finish of the photograph; and we are glad to see a solution to this difficulty is pointed out by the editor of the *Figaro*, who recommends those desirous of preserving the picture to remove it from the paper by moistening the back with a wet sponge, and to transfer the image to a suitable album. Hot water should never be employed for unmounting a Woodbury print, as there is always a risk of disintegrating the pigmented surface.

*The Obernetter Reproduction Process.*—Some experiments made with the Obernetter method of reproducing negatives induce us to think very highly of this plan of multiplying clichés. Very much depends upon the fine quality of graphite that is used, and a sample specially ground for us by Mr. Newman, of Soho Square, answered the purpose admirably. As the most delicate half tones in the photograph are made up simply by particles of graphite adhering in greater or less quantity to the hygroscopic image, it stands to reason that, unless the material is an impalpable powder, pinholes or specks innumerable will be seen throughout the picture. Obernetter recommends the pouring off of the superfluous sensitive mixture as soon as the plate has been coated with it; but this it is difficult to do sometimes, for, on tilting the plate, the liquid is apt to run off like oil, and leave bare glass in places. By allowing the liquid to remain upon the plate for a minute or two, before tilting off the superfluous part of it, there is no risk of this *contretemps* happening. A very little practice is necessary to obtain a result, although to become perfect and certain in the manipulations naturally requires care and attention. Prints from our own first results were full of detail, but a little flat, but this was simply owing to being too sparing in the application of the graphite. Of two



negatives which M. Obernetter has been good enough to multiply for us, the originals are in no way superior to the reproductions, for impressions from the original and duplicate are almost, if not quite, indistinguishable.

*The Photographers' Benevolent Association.*—The English Photographers' Benevolent Association does not seem to float so readily as the sister society in Paris. The number of members in the Paris association already amounts to hundreds, and the directors are enabled, therefore, to do something for photographers and photographers' assistants beyond providing for them in old age and sickness. A registry is kept of all those requiring places, or desirous to effect an exchange, or of bettering themselves, and this registry is consulted by those in Paris or in the provinces who are looking for assistants in the various branches of the art. Indeed, the French association has a *locale* of its own, and fulfils the office of club as well as that of a benefit institution. It would be well, therefore, when our own association gets into working order—and the day, we hope, is not far distant—to study the regulations and working of the Paris institution, so that we may ascertain whether anything is to be gained by appropriating some of the arrangements therein adopted. Until, however, subscribers come forward more numerously to support the association—even if it is only to give it a fair chance at starting—it would not be wise of the authorities to adopt a wider programme than that now put forward, which seems to have been drawn up with much care and attention. Once more we earnestly advise all those who look to photography for a livelihood to consider the prospectus just put forward by the association, with a view to giving it a hearty and cordial support.

## SPECTRUM ANALYSIS AND PHOTOGRAPHY.

BY J. NORMAN LOCKYER, F.R.S.\*

So much for the application of photography to what may be called the celestial side of spectroscopy; but let me tell you that this, so far as spectroscopy is concerned, does not exist. To the spectroscope all nature is one, and it is absolutely impossible to make a single observation, either on a sun, or a star, or a comet, without bringing chemical and physical considerations into play; and I pity chemists if they employ the spectroscope in terrestrial chemistry—they have not done much in that way yet—but I pity them if they commence operations in that way, unless they take the sun and all the various stars of heaven into their counsel when they do it, because the spectroscope is absolutely regardless of space, and shows us that the elements which are most familiar to us here, or at all events a good many of them, are present in the most distant stars, and the spectroscope shows us those elements existing under conditions which are absolutely impossible here. Therefore, if a man is studying cadmium chemically, and does not go to the sun, and see what cadmium is there, he simply leaves half his evidence out of the record.

There is another point, too: spectroscopy is, above all things, molecular. We are dealing with the ultimate atoms, or molecules, or whatever you like to call them, when by means of the short wave temperature of the spark we drive a substance into vapour. And if chemists, for instance, will simply ask themselves which substances have their lines reversed in the solar spectrum, I think before they have thought that problem out—that very simple problem, as it seems—there will be such a flood of light thrown upon terrestrial chemistry, that the only wonder will be that it has not been seen before, years and years ago. These, you will say, are theoretical applications. It is perfectly true; and there are a great many other theoretical applications that it would be my duty, as it would be my pleasure, to bring before you, if time permitted. But that is not all. I have to refer to the application of the spectroscope in what are considered by some people more practical directions, although I am always sorry to see science get down to its practical side, because, when it has got there, it is more or less used up. The more you deal with the most abstruse considerations of science, the more likely you are to get practical applications out of them, if you care more for practical applications than for abstract truths. But, however, in my next lecture I shall have to

talk about the practical applications, which some people may consider of more importance; but before I do that, there is one more method that I wish to call your attention to. You have already seen how excessively important it was to use a slit instead of a round hole in these experiments. It was the verdict of Wollaston, and it was the verdict of Becquerel and Draper, as I have shown you to-night with regard to photography. You have also seen that we can use the circular corona as a slit equally well. Therefore, if we like to take a long slit and divide it into as many portions as you choose, we see at once the improvement that we introduce into photography. All we have to do is to divide that slit into portions, as it were, by letting a window run down the slit, and when the window has arrived at the second part of the slit, let in light from a new source. Let me show you some photographs which illustrate better what I mean. Here is a single photographic plate on which a new method has enabled us to register no less than four different spectra. Those of you who are more familiar with photographic processes will immediately see how it is that the number has not been forty instead of four. Having a slit of a certain length, if I open all the length of that slit at once I should get a spectrum the breadth of which would depend upon the length of the slit; but if I commence operations by allowing the light first to come through one small portion of the slit, then we shall get the light from the particular metal which I employ in the electric arc falling on one part of the plate, and registering itself on the photographic plate. Then, if I close up that part of the slit, and open another one, I shall be able, through that newly opened part of the slit—all the rest being closed—to photograph on the plate the spectrum of another substance, say iron. Then, having used up that part of the plate, I can close that portion of the slit, I can bring my window lower down, and there we have the spectrum of cobalt. The window has been brought further down, and there we have the spectrum of nickel, so that we have, as the work of some eight or nine minutes at the outside, a photograph—not a perfect one in this case, but this was the first one taken on this method—which will register with the most absolute and complete accuracy and certainty not less than 1,000 lines. Now, a careful student of these lines, working as hard as he can, thinks himself very fortunate if he can lay down ten an hour. Therefore, as ten an hour are to 1,000 in seven minutes, so is the eye to photography in these matters.

I have another photograph of a somewhat similar nature, which I am anxious to place before you. We have here an absolute comparison rendered possible, by means of photography, between the lines of the spectrum of iron and the lines of the spectrum of the sun. You see that in the case of most of the thick lines you get a line in the solar spectrum corresponding with the lines of the iron. And, more than this, you see, I hope all of you, that these lines of iron are of different lengths. The reason of that is that I have been careful to photograph on the plate the lines due to the various strata of iron vapour, from the rarest vapour, which is obtained at the outside of the electric arc, to the densest, which occupies the centre of the core, and you will see the most beautiful gradation as we pass from the outside part of the spectrum to the inside. This inside part represents the complete spectrum of the core, and the outside the incomplete and almost monochromatic spectrum of the vapour which surrounds the denser core in the middle of the spark; thus we have practically reduced the spectrum of iron to one line instead of 460. That is the first photograph of the kind that has been taken; I say that, not because I am proud of it, but because you all know how enormously photographic processes are likely to be developed, the moment not one individual, but a great many try their hands upon them, so that an enormous improvement upon what you now see may be anticipated. Not only have we developed, in the application of photography to spectroscopy, a valuable ally to science, as we have in the application of photography to astronomy—and you know what that has done, and what it is going to do—but we have, I believe, what we may almost call a new chemistry, some day to be revealed to us by means of photographic records of the behaviour of molecules. Recollect that the difference between the iron spectrum of one line and the iron spectrum of between 400 and 500 lines is simply due to the difference in the arrangements of the molecules or atoms of iron in the centre of the electric arc and its exterior. There is one question which all lovers of the spectroscope may ask of photographers, and that is this: why should we any longer be confined in registering spectra to the more refrangible end of the spectrum, when one of the very first spectra of the sun that was ever taken was a complete photograph of the spectrum, including



not only the blue, the green, and the yellow, but the red, and the extreme red? I think that if photographers will study the action of light on molecules, and read that extraordinary paper of Becquerel's, and will give those who are familiar with the spectroscope, and those who are anxious to promote the progress of spectroscopic research, a means of extending photographic registration, not only into the green part of the spectrum, which they do already with difficulty, but to the extreme red, then the use of the eye will almost entirely be abolished in these inquiries. And although no one has a higher estimate than myself of the extreme importance of the eye, I think that the more it is replaced by permanent natural records in these inquiries, the better it will be for the progress of science.

## A NEW SYSTEM OF ENGRAVING PLATES FOR TYPOGRAPHIC PRESSES.

BY J. LUTHER RINGWALT.\*

It has become a popular entertainment in some theatres and lycceum halls for artists to draw caricatures, scenes, or portraits in the presence of an audience. I propose this evening to attempt the more difficult task of having drawn and engraved in your presence a plate from which impressions can be printed, and to explain the system by which such a feat is rendered possible. The preliminary preparations consist in the coating of a zinc plate with an acid-resisting varnish, and the subsequent scoring of the coated plate with parallel incisions, so that the effect of a series of straight alternate white and black lines is produced.

The art of engraving on wood is older than the art of printing with moveable types, inasmuch as block books, cut on wood, preceded the products of Gutenberg and Fust; and it is a somewhat remarkable fact that while wood engraving received an impetus from the invention of printing, which led to its rapid development to a very advanced stage, it gradually became, from a period near the commencement of the seventeenth century to a time near the close of the eighteenth century, so much neglected and abandoned that it fell almost wholly into disuse. The works requiring illustration during this period were embellished almost exclusively by the products of the copper-plate press. In the latter portion of the eighteenth century, however, a revival of wood engraving began. The famous Bewick was the pioneer in this movement, and he restored the art to such a high state of perfection that he had numerous successors, whose labours became better and better appreciated, and evoked a larger and larger demand as the fact became apparent that, by a proper degree of care and skill, and the employment of good art assistance, pictures capable of being printed on the typographic press could be produced of so fine a grade that, for most practical purposes, they would answer all the ends of copper-plate engraving. Copper or steel-plate pictures remain the most elegant and finished of any of the black products of printing, but they are subject, from an economical standpoint, to a great disadvantage, in the slowness and costliness of the methods by which they are printed; for while the old hand printing press, capable of turning out only a few hundred impressions per hour, has been superseded by an immense variety of machines, some of which can print twenty thousand copies an hour, and while thousands of copies of excellent wood engravings are printed per hour on various wood-cut presses, the copper-plate press is scarcely more rapid in its operation to-day than it was two centuries ago, and this conjunction of circumstances goes far to account for the rapid revival and extension of wood engraving during the last eighty or ninety years, and the relative decadence of copper or steel-plate engraving for popular purposes.

Desirable, however, as the products of wood engraving are, alike on account of their beauty and the rapidity and cheapness with which impressions can be taken, the art of producing them is tedious, difficult, intricate, and expensive, and this fact has led to the employment of no inconsiderable

amount of inventive genius in attempts to discover acceptable and economic substitutes. The motive which led to the discovery and extensive application of lithography was, if not identical with, at least akin to this incentive. The Daguerreotype and photograph had their birth in the same or a similar desire, and the Woodbury process is a still later outgrowth of the modern demand for illustration. Still, neither of these inventions exactly answered the precise object of supplying forms or plates from which pictorial representations could be multiplied with the readiness or rapidity attainable on either of dozens of typographical printing presses, and it is only during a recent period that the prospect seemed hopeful of finding substitutes for wood engraving that were in all respects entirely satisfactory.

One class of the experiments directed towards the accomplishment of this object has culminated in the discovery and application of a method for producing typographic printing plates by the aid of the photograph and the action of light on gelatine and bichromate of potash. The products of this art, which are now becoming somewhat numerous, are good, or nearly good enough for all practical purposes when the original is itself a printed picture; but the engravings produced by this method from drawings are frequently unsatisfactory unless a degree of finish, that can only be attained by long practice and great labour, has been employed in the preparation of such drawings.

Still another class of experiments, and the one to which I desire to call your special attention, is based on the employment of drawing implements, acids, and tools for the purpose of creating a raised surface on a metal plate that corresponds in its inequalities with the lines of a wood engraving. In France a great deal of attention has been paid to this system of operations during the last thirty or forty years, and M. Gillot, who died but a few months ago, brought the art of engraving with acids on zinc to such a state that it has been employed for many purposes, and resorted to with great frequency, especially for illustrations of an inferior grade, which it was desirable to produce with great rapidity and cheapness.

M. Gillot demonstrated that if a drawing is made on a piece of polished or grained zinc with a pigment or substance sufficiently powerful to protect the lines drawn from the action of acid, the whites of a picture may be eaten away by acids to a sufficient depth to afford the relief necessary for a typographical engraving, the acid thus doing the work of the graver; and this principle of production being established, the details to be perfected relate to the substances to be used in drawing, the methods of applying them, and the selection and management of acids during the process of engraving.

A somewhat detailed description of the Gillot process will be found in an article published in the *Printers' Circular* of this city for October, which I contributed to that journal, and it is therefore unnecessary to describe it more fully here.

One of the characteristics of the engravings produced by the Gillot process, which it seemed to me desirable to avoid, was their want of resemblance to wood engravings. Although printed on typographic presses, many of the specimens I have seen looked more like inferior lithographs than wood engravings. This peculiarity I believe I have fully succeeded in avoiding. You may consider the pictures good, bad, or indifferent, but very few persons would suppose they were produced by any other process than wood engraving; and the pictures themselves can be made as good as the art work employed in their preparation.

One of the most embarrassing difficulties involved in all attempts to produce acceptable substitutes for wood engraving arises from the great variety in the depths of the different portions of the plate or block from which impressions are to be made. It is easy enough to make all the

\* Read before the Franklin Institute.



black lines necessary to produce a printed picture; but one of the most serious tasks is to get rid of all the superfluous wood or metal that must be removed before the parts intended to be white can escape the searching touch of printers' ink. The slightest scratch on a space surrounded by the black parts of the picture will create a white mark, while indentations of considerable depth are required for all whites of considerable breadth—the general rule being that each enlargement of the area of the white portion of a picture requires a corresponding increase in the depth of the block or plate from which impressions are taken. Wood engravings are made up of a series of black and white lines, and the essential requisite in their production is the arrangement of these lines in appropriate artistic harmony, and with due regard to the effect requisite for the proper representation of the object to be illustrated. In many wood engravings the principal portion of the picture consists of a series of white and black lines or surfaces, which do not at any point possess any considerable depth, or occupy any considerable area of the plate; and it occurred to me that many pictures, good enough for practical purposes, could readily be produced by creating, mechanically, on a plate a series of straight black and white lines, as the basis or substratum on which any desired design could be drawn.

This idea I have practically applied to the production of a considerable number of engravings intended for various purposes, and impressions from these engravings have been taken on all the leading varieties of typographical presses.

Mr. Ringwalt then read the specification of his American patent, as giving a terse description of the process.

The object of my invention is to produce quickly, and at a cheap rate, plates from which pictures may be made by an ordinary typographic printing press, and this object I attain by drawing on a varnished and scored plate, with acid-resisting varnish, the picture to be produced, and then subjecting the plate to the action of appropriate acid.

In carrying out my invention, the first thing to be done is to select a metal plate of proper size, having a perfectly plane and smooth surface. I prefer, both on the score of economy and efficiency, ordinary sheet zinc. I first cover the plate with a thin coat of varnish, or other material capable of resisting the corrosive action of the acid to which it has to be subsequently subjected. I then, by means of a ruling machine, score the entire surface of the plate. \* \* \* The varnished surface of the plate may be scored with any system of lines which the character of the picture to be produced may suggest, the scoring determining the style of groundwork of the picture. After the varnished plate has been thus scored it is ready for the artist, who proceeds to paint with a resistant varnish on the scored surface the design or figure he desires to produce. \* \* \* At the points where high lights are required, the varnish is scraped away, and the metal surface of the plate exposed to an extent and form determined by the character of the lights. The plate is now subjected to the action of dilute nitric or sulphuric acid, or other corroding bath usually employed in etching, the acid eating away all the parts of the metal exposed. When this process has been completed, the varnish is removed from the face of the plate, and the latter is then mounted on a block of appropriate thickness, and this block may be used for printing from in an ordinary typographical press, the ink adhering to those parts only of the plate which had been covered with the varnish. The impression taken from the plate will consequently be precisely like the varnished portion of the same. \* \* \* More elaborate plates may be produced by varying the character of the scoring in a manner which yet nature of the picture to be produced may suggest.

## THE PREPARATION OF DIFFRACTION GRATINGS.

BY LORD RAYLEIGH, F.R.S.

[We have been favoured by Lord Rayleigh with a copy of his communication to the *Philosophical Magazine* on the subject of the manufacture and theory of diffraction gratings. We reprint those portions of especial interest to many of our readers.]

There are two distinct methods of copying practised by the photographer—(1) by means of the camera, (2) by contact printing. The first, if it were practicable for our purpose, would have the advantage of leaving the scale arbitrary, so that copies of varying degrees of fineness might be taken from the same original. By this method I have obtained a photograph of a piece of striped stuff on such a scale that there was room for about 200 lines in front of the pupil of the eye, capable of showing lateral images of a candle; but I soon found that the inherent imperfections of our optical appliances, if not the laws of light themselves, interposed an almost insuperable obstacle to obtaining adequate results.

However perfect a lens may be, there is a limit to its powers of condensing light into a point. Even if the source from which the light proceeds be infinitely small, the image still consists of a spot of finite size, surrounded by dark and bright rings. That this must be so may be shown by general considerations without any calculations. If a lens is absolutely free from aberration, the secondary waves issuing from the different parts of its hinder surface agree perfectly in phase at the focal point. Let us consider the illumination at a neighbouring point in the focal plane. If the distance between the two points is so small that the difference of the distances between the point under consideration and the nearest and furthest parts of the object glass is but a small fraction of the wave-length ( $\lambda$ ), the group of secondary waves are still sensibly in agreement, and therefore give a resultant illumination the same as before. At a certain distance from the focal point the secondary waves divide themselves into two mutually destructive groups, corresponding to the nearer and further parts of the object glass. There is therefore here a dark ring. Further out there is again light, then another dark ring, and so on, the intensity of the bright rings, however, rapidly diminishing.

The radius  $r$  of the first dark ring subtends at the centre of the lens an angle  $\theta$  given by

$$\sin \theta = \cdot 61 \frac{\lambda}{R},$$

where  $R$  is the radius of the lens. If  $f$  be the focal length, we have

$$r = \cdot 61 \frac{f\lambda}{R}.$$

Let us now suppose that the problem is to cover a square inch with 3,000 lines. On account of the curvature of the field, it would be impossible to obtain extreme definition over the surface of a square inch with a less focal distance than (say) four inches. If we take

$$f = 4 \text{ and } \lambda = \frac{1}{40,000},$$

we find

$$R = \frac{\cdot 61}{10,000r},$$

which gives

$$R = \cdot 2 \text{ for } r = \frac{1}{2,000}.$$

That is to say, if the focal length were 4 inches, and aperture  $\cdot 4$  inch, the first dark ring corresponding to one of the lines would fall on the focal point of the neighbouring one—a state of things apparently inconsistent with good definition. It is true that the aperture might well be greater than half an inch, so that it may seem possible to satisfy the requirements of the case. But the result of the above calculation, being founded on the supposition of entire freedom from aberration, both spherical and chromatic, is subject in practice to a large modification. In astronomical telescopes, where everything is sacrificed to the requirement of extreme definition at the centre of the field, the theoretical limit is sometimes closely approached; but the case is very different with a photographic lens; in fact, the very first thing it occurs to a photographer to do, when he wishes to improve the definition, is to contract the aperture of his lens by



means of a stop—a course which would be attended with the opposite result in the case of a perfect object glass, or even a good astronomical telescope. While, therefore, it might be too much to say that the reproduction of 3,000 lines in an inch by lens and camera is impossible, the attempt to do so without very special appliances appears in a high degree unpromising. It would certainly require a lens more than usually free from spherical aberration, and unlike either a telescopic or a photographic object glass,\* achromatic (if the expression may be allowed) for the chemical rays unless, indeed, the latter requirement could be evaded by using approximately homogeneous light. It must be understood that nothing is here said against the practicability of covering a small space with lines at the rate of 3,000 to the inch, a feat probably well within the powers of a good microscopic object glass.

The method of contact-printing, on the other hand, is free from optical difficulties. The photographic film prepared on a flat piece of glass (or other support) may be brought by moderate pressure in a printing-frame within a short distance of the lines of the original grating; and if the source of light be moderately small, and the rays fall perpendicularly, the copy rarely fails in definition, unless through some photographic defect. When direct processes not depending on development are employed, the unclouded light of the sun is necessary. To avoid too much diffused light, I usually place the printing-frame on the floor of a room into which the sun shines, and adjust its position until the light reflected from the plate-glass front is sent back approximately in the direction of the sun. Too much time should not be lost in this operation, which requires no particular precision. Usually I cut off part of the extraneous light by partially closing the shutters; but I cannot say whether this makes any difference in the result. Those who are accustomed to this kind of experimenting will know that it is often less trouble to take a precaution than to find out whether it is really necessary. In an early stage of an investigation, when the causes of failure are numerous and unknown, it is best to exclude everything that can possibly be supposed to be prejudicial. When the principal difficulties have been overcome, it will be time enough to determine what precautions are necessary, if the question has not been already settled by accidental experience.

(To be continued.)

## RECOVERING THE SILVER FROM PHOTOGRAPHIC WASTES.

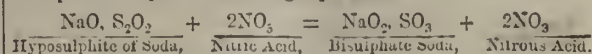
MIXTURE OF IODIDES, CHLORIDES, CYANIDE, NITRATE OF SILVER, HYPOSULPHITE OF SODA, CYANIDE OF POTASSIUM, ETC.

BY JAMES CHISHOLM.†

VARIOUS methods have been proposed to accomplish this object, but every one of them suffers from disadvantage: one of them yields the sulphide of silver, which takes an enormous quantity of carbonate of soda to reduce, and repeated fusing; another method yields chloride of silver mixed with sulphur, where the difficulty is again the removal of the sulphur; another method, the reduction with metallic copper, is too slow and tedious. It was a particular study of mine to find a quick, accurate, and easy way to regain the silver from a mixture of all kinds of combinations, and at last I succeeded. As you are all well aware, the solution of chloride or iodide of silver in hyposulphite of soda deposits the silver combination on addition of acids, but, at the same, a great deal of sulphur, which mingles with the chloride of silver, and thus the regaining of the silver is rendered more complicated, a very large amount of carbonate of soda or potash being required to remove the sulphur, or a prolonged boiling with strong

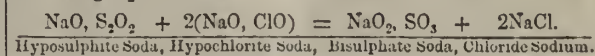
nitric acid. I was convinced that in order to avoid the depositing of the sulphur, I had to destroy the hyposulphite in such a manner as to make the separation of sulphur impossible.

This I found may be accomplished by adding the silver refuse to warm strong nitric acid. No separation of sulphur thus takes place, because the hyposulphurous acid in a nascent state is at once oxidized into sulphuric acid, as is explained by the following equation:—



But here we have the development of very disagreeable fumes of nitrous acid and hydrocyanic acid from cyanide of potassium. This method seemed to me impractical. I found I could replace the nitric acid by a mixture of chlorate of potash with an acid, but even in this case we cannot avoid the evolution of offensive gases.

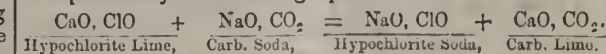
I saw I had to bring about the oxidation in an alkaline or neutral solution, and tried the effect of hypochlorite of lime and of soda, and succeeded. If hyposulphite of soda is added to hypochlorite of soda, an oxydation to sulphate of soda will take place. This may be represented by the following equation:—



No separation of sulphur takes place, and no development of any disagreeable fumes; and thus this method may well be recommended, and I am confident it will replace and supplant all others. The common bleaching powder (hypochlorite of lime) may do also, but for obvious reasons the hypochlorite of soda (freshly prepared), a clear liquid, is far preferable. I simply proceed as follows: I add to the silver refuse hypochlorite of soda, until the precipitate becomes permanent, and does not disappear by stirring the mass, and assumes a perfectly white colour. At this time a strong evolution of gas will ensue, which is perfectly odourless, consisting mainly of carbonic acid derived from the carbonate of soda contained in the hypochlorite.

Now I heat the mass moderately, and take a little of the supernatant clear liquor out, adding to this a few more drops of hypochlorite. If no turbidity is thus produced, the process is finished, and the entire white precipitate, after washing with water, fused with carbonate of soda and potash in a crucible, whereby the pure silver bullion is easily obtained. To prepare the hypochlorite of soda I found the following way the simplest and the best: Take of chlorinated lime twelve troy ounces; carbonate of soda, twenty-four troy ounces; water, twelve pints. Dissolve the carbonate of soda in three pints of water, with the aid of heat. Triturate the chlorinated lime, a little at a time, with small portions of the water, gradually added, until a smooth, uniform mixture is obtained. Mix this intimately with the remainder of the water, and set the mixture aside for twenty-four hours. Then decant the clear liquid, and, having transferred the residue to a muslin strainer, allow it to drain until sufficient liquid has passed to make, with the decanted liquid, eight pints.

Mix this thoroughly with the solution of carbonate of soda, transfer the mixture to a muslin strainer, and allow it to drain, adding water, if necessary, towards the close, until eleven and a-half pints of liquid have passed. Lastly, keep the liquid in well-stoppered bottles protected from the light. The liquid is the hypochlorite of soda, ready for use, which is explained by the following equation:—



A transparent liquid of a greenish-yellow colour, having a slight odour of chlorine, and a sharp, saline taste. Its specific gravity is 1.045. It rapidly discolourizes a solution of indigo, and produces a copious light brown precipitate with a solution of sulphate of iron.

\* Photographic lenses are corrected on the principle of making the "visual and chemical foci" coincident, which leads to a different construction from what would be adopted were the chemical rays alone attended to.

† Read before the Photographic Section of the American Institute.



# The Photographic News.

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## THE PHOTOGRAPHIC SOCIETY OF LONDON.

IN the sudden collapse of the executive body of the Photographic Society, and the hopelessness of any further successful conciliatory steps being taken by which a fusion of antagonist elements might be brought about, and harmonious co-operation secured, it seems tolerably certain that entire re-organization must be the best, if not the only course open to the society. At the present moment all is chaos, and it is improbable that a legal quorum of officers could be formed to transact business of any kind in the society. The six nominees of the requisitionists are, it seems to be generally held, in a very doubtful legal position, if from no other cause than the fact that their final election was decided by show of hands instead of by ballot. All the old council, with the exception of two or three, have, we understand, either actually resigned, or expressed indisposition to take further action until some step for a complete re-organization of the council has been made by the general vote of the society.

It were a bootless task, now, to consider the causes which led to a renewal of hostilities at the last meeting, and issued in a severance wider than ever between the old body of officers and their opponents. An "Old London Member" suggests, on another page, that this fresh outbreak of hostilities was but the legitimate issue of the distrust which still prevailed on both sides. If this distrust existed, it is tolerably clear that harmony could not long have prevailed. If, as is alleged, combined action was again invoked on the evening of the fourteenth to secure a vote, if necessary in opposition to the council, it is clear that old officers were to be permitted to resume office only on condition that they agreed with the opposition in their view of the legality of certain proceedings. If what our correspondent terms a "vigilance committee" were to be kept in reserve, ready for action whenever the leaders of the opposition felt disposed to summon them, the old council would have been subject to a form of coercion most intolerable, and the more offensive because they could not stoop to meet it by any similar effort at combination. As we have said, any detailed discussion of the matter is useless now; we merely refer to it as illustrating and apparently confirming the statement of our correspondent, that a deep-seated distrust prevailing, rendered a patched-up peace impossible. It is equally unimportant to discuss, now, the question whether the president showed wisdom in his impulsive response to interrogation, or whether nothing in his official life became him so ill as the leaving of it. As regards the council, it

is probable that varied views prevail amongst different members, but we believe that they are, with unimportant exceptions, at one as to the non-resumption of office under existing circumstances.

In this uncomfortable state of things a thorough re-organisation appears to be the only course to save the society. The only question which arises is as to the best mode of setting about it. There are two ways: one is by an appeal to the members at large, and an election by their suffrages; the other is by calling a special general meeting, and deciding the future of the society by the vote of resident members. Both modes will, we believe, be brought under the consideration of the next meeting. A communication from Mr. Hooper informs us that he contemplates moving a resolution to the following effect:—

"That in the present crisis in the affairs of the London Photographic Society, as at the present moment there is no legally constituted executive (the old members of council having, with one or two exceptions, resigned, and the six gentlemen who have been conducting the affairs of the society having been re-elected by show of hands instead of by ballot, as required by the laws), it is hereby agreed that the best way out of the difficulty will be to send round to all members of the society—country as well as metropolitan—an entire list of the subscribers, and request such members to attach a mark to the names of those gentlemen they wish to be the executive for the time being, taking care to elect one president, three vice-presidents, and eighteen councilmen: placing a "P" against the name for the president, a "V P" for the vice-presidents, and a "C" for the councilmen; and that these gentlemen shall be requested to meet and frame new laws—the same to be submitted to a special meeting, and on being discussed and agreed to, and printed, a general election of all officers shall at once take place, and shall be declared to be the legally constituted executive of the society until the following annual meeting."

This, in effect, is similar to the recommendation of a correspondent on another page. As regards the other proposition, a notice has been sent out by Mr. Spiller, as one of the vice-presidents, to the following effect:—

A special general meeting of the Photographic Society will be held immediately after the close of the next ordinary meeting, on Tuesday the 12th of May:—

1st. To substitute for the third, fourth, and fifth paragraphs of Law VII., enacted at the special general meeting of February 10th, 1874, the following:—

"If vacancies occur by death, resignation, or other cause in the office of president, vice-presidents, treasurer, secretary, or members of council, individuals shall be elected at the annual general meeting, or at a special general meeting to be called for the purpose, to fill the vacant places, and shall serve the offices subject to the condition of retirement by seniority that would have applied to the persons whose seats they fill.

2nd. And, in the event of this alteration of the clauses being carried, to nominate a president, three vice-presidents, and eighteen members of council, including a treasurer and secretary, to fill vacant places; such officers and members to be elected at another special general meeting, to be called at the earliest practicable date subsequently. JOHN SPILLER, Vice-President.

In both cases, it will be seen, the election of an entirely new staff of officers is contemplated; but in one case it is proposed that the election shall be by the whole body of the members, and in the other by the personal votes of those who can attend a special meeting. In neither case can the proceedings be conducted in conformity with strict law, as it is doubtful whether a legally-constituted quorum of officers can be formed to give legal effect to any proceedings. In Mr. Spiller's announcement, however, the precedent of law is followed, but it is, we fear, the narrow and imperfect portion of the law to which so much of the mischief and heart-burning of the late strife has been due, that portion of the law which has vested in the hands of a few resident members the control of a society which represents the United Kingdom. In Mr. Hooper's proposition we have the difficulty boldly recognized and met. The reign of law being suspended, appeal is to be made to



the legitimate source of law, the body politic, in whose behalf the laws have to be made. Every well-wisher to the society must desire an end to those miserable bickerings. The voice of the society at large will be accepted as decisive, we opine, on all hands, whilst the decision of a meeting of resident members is as little likely to settle anything satisfactorily and permanently as any of the recent meetings, and every step of the kind must tend, more and more, to give a merely local character to the action of a society which should be representative and national.

### PRESERVING SENSITIVE PAPER.

THE preparation of sensitive paper which may be kept without discolouration continues to interest photographic experimentalists in America. At a recent meeting of the Photographic Section of the American Institute, Mr. A. T. Anthony exhibited a sample of paper which might be kept several days without deterioration. The bath was made as follows:

"Put thirty grains of nitrate of silver in one ounce of water. To that add two grains of citric acid. After that is dissolved, add ammonia until the precipitation—which is a precipitate of the citrate of silver—ceases. Then re-dissolve with nitric acid, and leave the solution so that a small proportion of the citrate of silver remains. Let that settle perfectly, and then add ten drops of nitric acid to every two quarts of the solution."

The prints were said to be delicate and vigorous, and in every way satisfactory. Mr. Anthony added:

"The print had been fumed ten minutes with strong ammonia. He had kept similar paper for five days just as white as when it was made. The paper comes from the bath more glossy than it goes in. The bath is acid, and does not turn. It becomes saturated with albumen to a certain point, and then takes up no more from the paper. He published an account of this some time since, and the *Photographic News* and the *Bulletin* of the French Photographic Society regarded it as merely experimental and empirical. He inquired whether there was anything photographic which was not empirical. Chemicals could be combined according to the known laws; but no one could predicate the action of light upon any new combination of chemicals; and any combination of chemicals in connection with the action of light must be empirical. The paper was sensitized in a light room. He could float a hundred sheets in the solution without having a single bubble. If a bubble forms, it breaks readily. The paper is more sensitive in printing than ordinary paper, and tones splendidly."

We do not remember to have made any slighting remark on Mr. Anthony's experiment. Of course almost everything in photography is empirical. Very little is understood of the rationale of old processes, much less can we hope to predicate with exactness the possibilities of new processes, or to limit results by theoretical considerations.

### A NEW METHOD OF RETOUCHING AND ENLARGING COMBINED.

IN the *Moniteur de la Photographie* reference is made to a new process just patented in France under the name of "Lambertype." It appears that in the course of 1872 some enlarged portraits, finished in a new style, caused a sensation in Paris, and MM. Lambert and Vuillier, by whom the process had been elaborated, decided not to take out a patent for the same, but preserve the method a secret, and work it for themselves. The partnership, however, came to nothing, and M. Lambert has now patented the process, and announces himself ready to grant licenses to any one desirous of making use of the process.

Unfortunately we are, as yet, without any precise information upon the subject of the process, but so far as the enlarging goes, this seems to be carried out by the aid simply of carbon transparencies. M. Lacan, who recently

paid a visit to M. Lambert's studio, states that the working apartment is fitted up as a dark room, with yellow glass, a camera looking out through one of the panes which had been removed. Outside, a large mirror, moving vertically, served as reflector, and in the interior of the camera were frames for transparencies.

During M. Lacan's visit, M. Lambert collodionized a plate of sixty centimetres, and secured an enlargement from a transparent carbon positive in six minutes (it being half-past five in the evening); he eschewed all intensifying, and his image was rather a weak one. Up to this point there was nothing of novelty, but it is at this point that the retouching takes place by a method which is said to be very simple and practical, and transforms the image at once into a beautiful picture.

It is stated that an artist will naturally produce finer effects than one unused to the brush, but a little practice will ensure very passable results.

### PROTECTING PHOTOGRAPHS FROM ATMOSPHERIC INFLUENCES.

A CORRESPONDENT at Canterbury (Mr. Joseph Peach) suggests, as a means of securing permanency in valuable photographs, that they should be mounted and framed so as to be impervious to moisture, dust, foul gases, and other deleterious atmospheric influences. There can be no doubt that many a spoiled good picture owes its fading and discolouration to the utter lack of proper care in its preservation. Imperfectly fixed and imperfectly washed prints will fade, no matter how carefully they may be preserved; but where a print has been carefully treated in each stage of its production, hermetical sealing from the atmosphere will doubtless prolong its tenure of existence. The method our correspondent describes as follows:—

"Instead of mounting on the usual (sheet of destruction, I term it) cardboard, take a sheet of thin flat glass, tip the back corners of the print with a solution of glue, lay it on the glass in position. Another sheet of glass, exactly the same size, is laid on the print; bind the two glasses together round the edges with stout gum paper. When dry, coat the paper binding two or three times with shellac spirit solution. The print thus permanently hermetically sealed up, lay it thus prepared in its frame—black ebony, let me say. Next lay on a piece of crimson velvet, or any such material as will suit the taste, then a sheet of paper, if necessary, and lastly the back-board; fasten with sprigs. The print will, at a distance, have the appearance of being mounted on the velvet."—Yours most respectfully,  
JOSEPH PEACH, J.  
3, Bingle Street, Canterbury.

### ON THE TREATMENT OF ALBUMENIZED PAPER.

BY L. G. KLEFFEL.

COMPLAINTS innumerable, to be heard from time to time, against samples of albumenized paper, have caused me to institute a series of investigations in reference to the material, for I could not, somehow, bring myself to believe that defects which are so often inveighed against were all of them due to the paper itself. My opinion seemed all the more plausible by reason of the fact that, while one description of paper found favour with some, by others it was utterly condemned. The question of blisters I left out of the question altogether, for this defect is only met with when the albumen film, as in the case of very brilliant papers, is very thick indeed.

The result to which I have been led by my experiments is, that the faults which are most generally found in albumenized papers are not due to the material itself, but are, in the main, caused—

a. By the employment of weak silver baths; and  
b. By faulty manipulation of the paper in the operation of sensitizing.

As is well known, the white of egg is an alkaline body



capable of being dissolved in water. Of this one may easily convince oneself by immersing a strip of albumenized paper in water for five minutes, and then drying it on filter paper, when its gloss will be found to have vanished. By the use of a solution containing silver, the albumen is coagulated—or, in other words, transformed into a condition which hinders its solution—and the coagulation is the more complete the more silver there is contained in the liquid, that is to say, the stronger the solution of silver chances to be. From this it follows, as a matter of course, that the weaker the sensitizing bath is, the greater is the risk of the albumen surface being dissolved, causing the finished prints to be mealy and woolly; in many cases, when the bath contains a large proportion of albumen, the pictures are without gloss, and appear to be almost in a fog.

In order to bring about the coagulation of the albumen with perfect certainty, the silver bath should never be weaker than one in twelve, every ounce of fluid containing forty grains of nitrate of silver. Far better, however, is it to have the proportion of one in five, or in the ratio of one hundred grains of nitrate to the ounce of water, for by this means not only is the defect in question rendered perfectly impossible, but one is, moreover, not called upon to strengthen the bath continually as it is used, it being quite safe to allow the strength of the solution to diminish to one in twelve without fearing any injurious results therefrom. The best results are, however, of course, only then secured when the bath is kept in its normal state by the constant addition of silver. This is easily done, as it is a known fact that every sheet of albumenized paper measuring eighteen by twenty-two requires for the formation of chloride upon its surface about thirty grains of nitrate of silver, and this amount is absorbed from the bath, whether it is one in twenty, or one in five. For every sheet that is sensitized it is only necessary, therefore, to add to the solution thirty grains of nitrate of silver.

The argument that the employment of a very strong silver bath is much more costly than a weak one is to a great extent illusory, for, as we have just seen, the same quantity exactly of silver is required to form the sensitive film, whether the silver bath is strong or weak, provided that the percentage of salts contained in the albumen is the same. If, for instance, we have to do with a bath containing sixteen ounces of silver solution, of a strength of one in sixteen—which will contain, therefore, 180 grains of nitrate of silver—the bath will become entirely exhausted after sixteen sheets of paper have been sensitized upon it; as each sheet would take up thirty grains, the whole amount of silver would be withdrawn, for 16 by 30 equal 480, and it is this amount exactly which would be absorbed from even the strongest bath.

Then it is further argued that the solution which adheres to the surface of the paper when this is lifted from the bath must also be taken into consideration in determining the cost of the operation. This is, of course, a point that cannot be gainsaid. At the same time, the loss in this direction will disappear almost altogether if a glass rod is employed for draining the paper, for after the latter has been drawn over the rod, there will remain scarcely a superfluous drop of liquid attached to the paper. But in the case even of the pictures being somewhat more costly of production by the employment of a strong silver solution, there are very few photographers who would grumble at the slight increased expense, if thereby their pictures would be guaranteed to them perfectly clear and bright. By having recourse to a strong silver bath the many defects complained of are obviated, especially when the operation of floating the paper is confined to as short a period as may be absolutely necessary, and not continued, as is the case in some studios, for a period of four or five minutes. Irrespective of the circumstance that much time is necessarily lost in this way, there is always the danger

of the albumen becoming dissolved. The silver solution also penetrates into the body of the paper, and causes, in printing, the image to sink into the material, and it does not remain, as it should do, upon the glossy surface of the albumen. Only by floating the paper on the solution for the shortest time possible can the brilliancy and beauty of the negative be most fully rendered.

As a proof of this may be advanced the circumstance that if a sheet of albumenized paper is floated for about fifteen minutes upon a weak bath, the albumen becomes in this time completely dissolved, and the paper loses its gloss entirely. Long floating on the bath has, moreover, the disadvantage of speedily discolouring the bath, from the fact that the more albumen becomes dissolved in it, the more rapidly does the bath assume a brownish colour.

As the formation of the sensitive chloride of silver film commences as soon as ever the paper comes into contact with the silver bath, it is only necessary to allow the albumenized paper to float until it touches the solution uniformly all over—a circumstance which takes place, at the most, within thirty or fifty seconds after the paper has been applied.

If, therefore, my brother photographers will only resolve to stand fast by these precepts, they will not only cease to complain of bad samples of albumenized paper, but they will save themselves much worry and anxiety, and be rejoiced with the beauty of their results.

### A NOVEL PLAN OF PRODUCING CARBON PRINTS.

BY M. FARGIER.\*

A LITTLE while ago I had the honour of forwarding to the French Photographic Society some photographs printed in pigments obtained by a new method of operating, which I will now proceed to describe.

In one hundred grammes of water I dissolve five grammes of perchloride of iron and five grammes of citric acid. I pour this solution into a bath, and float upon it, for the space of a minute, a sheet of paper of very fine texture. After drying in the dark, I expose the paper to light under a negative. I then immerse the print as it comes out of the frame in a bath of pigmented gelatine, or gum, containing a trace of bichromate of potash. I wash immediately afterwards in tepid water if gelatine is contained in the bath, but if it is gum, then cold water is employed.

In this way the image is thoroughly cleansed of the colouring matter, and there remains but to fix it, free it from oxides, varnish it, &c. To every cubic centimetre of coloured gelatine, or gum solution, I add one drop of concentrated solution of bichromate of potash. If this amount be exceeded, the image produced lacks vigour; and if it be diminished, then the picture suffers in washing.

It would, perhaps, be preferable to employ, instead of coloured gelatine solution, the pigmented paper, or tissue, made by M. Marion, a material which is moistened with bichromate solution, and then applied to the face of the dry print.

The reactions that occur in this process are easy to understand. The light reduces the perchloride, and transforms it into proto-chloride, and this reduces the bichromate, and transforms it into sesqui-oxide of chromium, which combines with the gelatine, and renders it insoluble. Again, the citric acid accelerates in a great degree the action of the light, and opposes the action of the perchloride of iron upon the gelatine in the whites of the image.

I must admit that the process is one not unattended with difficulty, and that it is, moreover, scarcely one that will interest the general photographer.

\* Bulletin de la Société Française.



## AGAINST WEAK PRINTING BATHS.

BY JOS. UNGAR.\*

DISSOLVE one part of nitrate of silver in six parts of distilled water, and recruit it, according to daily use, by a solution of one part of silver in four parts of water, and you will have an excellent, trustworthy, and endurable sensitizing bath for paper. This formula, it will be said, is a very old one, and has been repeated times without number. True enough; but if the stone is continually rolling down hill, it must be pushed up again and again. One would scarcely believe it, but it is a fact that there are numbers of theoretical economists who, notwithstanding repeated failures, still keep to a weak silver bath, only giving it up to try one weaker still, with admixture often of foreign compounds, whose influence upon photography not a soul of us has an inkling of. That the results are not of the best; that the beautiful shining albumenized paper prints are flat; that defects arise upon the slightest inattention; that the bath rapidly becomes unserviceable by the deposit of organic matter, and requires elaborate measures to restore it; that the liquid in a short time goes the way of all chloride; and finally, that a great deal of time is lost over the business, which to the photographer, more than another, signifies money—all these are matters of which theorists of this kind take no account. And these gentlemen never see that it is they themselves who suffer, because, instead of producing from the finest negatives brilliant and deep toned photographs, they give the public matt pictures of poor appearance. That they gain nothing in the end by their parsimonious behaviour they can rest assured.

Those who allow their paper to float upon such a bath as here referred to, for the space of two minutes, and then remove the sheet gently, and hang it upon clips to dry spontaneously, will be sure to secure a vigorously printing and sensitive paper, provided the raw material itself and the albumenizing are faultless. Contrarily, if with such a sensitizing bath no good prints can be obtained, then one may be quite convinced that the paper itself is of inferior quality.

Slow and careful withdrawal of the paper from the bath is to be recommended, because in this way very little of the superfluous liquid is taken away, and the volume of the bath, therefore, but very slightly lessened. It will be found that only a drop or two of moisture passes to the bit of blotting-paper attached to the corner of the hanging sheet, while otherwise an appreciable amount of liquid will be lost.

To prevent any tendency to break, the paper is folded as soon as no more moisture is observed upon the surface of the sheet, and before it has had time to become dry and hard, and has rolled up stiffly, the material being put away flat in such sizes as may be desirable. Strong baths require that the albumenized paper should not be perfectly dry before being sensitized; for this reason, it is well to let the paper remain at least twenty-four hours previously in a damp locality, taking care, however, that it does not come into actual contact with water. Should there be no opportunity for doing this, and should the paper, after being floated on the bath, show signs of repelling the nitrate solution in parts, and drops be formed on the albumenized surface, the best plan is to place the sheets face upwards, after sensitizing, upon paper; to put over each a piece of clean filter paper, which absorbs the moisture very readily, the sheets being hung in this way upon clips, and dried. This plan of proceeding does not hinder work in the least, because it can always be done while the next sheet is floating upon the silver bath. The first method is the preferable one, although the latter is one often pursued in large studios.

Another plan I adopt of working a paper which has become too dry is one I can warmly recommend: it is

simply breathing upon every sheet before it is sensitized. The plan of proceeding is the following:—The dry, rolled-up sheets of paper are taken up like a pea-shooter, and, first from one side and then from the other, breathed into, the warm air being prevented from escaping by the operator placing his hand on the other extremity. The paper is then rolled up a second time, differently from the first, and again moistened with the breath, so that all portions of the surface are acted upon by the moisture, and then it may safely be sensitized. The action is marvellous. A sheet of paper not so treated will allow the solution to dry in drops upon its surface, while simply breathing upon will remedy the defect. The plan is as simple as it is effective, and will be prized by all who do not possess a cellar for keeping their paper in, nor a moist or cool locality for sensitizing. It should be borne in mind that the bath must be always brought up to its normal strength every day by the addition to it of a proportional quantity of the stronger stock solution.

One main advantage of a short sojourn upon a strong bath lies in the circumstance that upon such papers the print remains on the surface, and thereby the deep toned shadows and delicate gradations of the negative are enhanced, whilst the shadows upon paper prepared with a weaker bath possess neither vigour nor fine details, and have a flat, washed-out look. If it is sought to obviate this defect by a longer floating upon the bath, more vigour is secured thereby, it is true, but then a portion of the albumen film is dissolved away, and the surface loses much of its glossy character. The silver sinks deeper into the paper mass, and the picture, therefore, appears more sunken, and loses its delicacy.

The operation of sensitizing upon strong baths is, moreover, comparatively easy. Failures in preparation are more rarely met with. Any bungling when placing the paper on the liquid does not leave a mark, and if air-bubbles are formed by letting it fall upon the solution too rapidly, these are rapidly dissipated by lifting the opposite end from the bath and allowing it sink again. With weaker solutions the matter is different, the sensitising operation being somewhat risky. A pause in laying down the paper inevitably produces a matt insensitive line, and if bubbles are formed, no matter how soon they are chased away, small circles are apparent on printing. The explanation of these disagreeable defects is easy to discover. The sensitizing process is of a very energetic nature. A strong bath coagulates the surface of the albumen in a moment. The large quantity of silver at hand eagerly combines with the salts. In a weak bath the action is slower, but still quick enough to rob the surface of the bath, instantly, of the greater portion of its silver. If that portion of the liquid containing little silver comes into contact with a not coagulated part of the paper which has been covered by an air-bubble, the albumen must be in a great measure dissolved by the bath, leaving that part of the surface with very little silver upon it. The necessary consequence of this is, not only the destruction of the paper on such spots, but also a certain deterioration of the bath.

It may be advanced by some that they are careful, and take the greatest pains in the sensitising of the paper. This will not, however, advance matters much, for even in this case a certain quantity of the albumen is dissolved in the bath, because the coagulation takes place so slowly and imperfectly, as may be proved by the flat prints which result. If greater vigour is sought to be secured by increasing the period of sensitizing, it would either be necessary to lengthen the time progressively until a space of ten or fifteen minutes is reached, or to add as much silver solution from time to time to the bath as is required in the case of a stronger liquid.

Dilute baths usually deceive a tyro, because a first experiment is no criterion of their value, the sheets sensitized at the commencement giving very good impressions. But

\* *Photographisches Notizen.*



it is not long before one is beset with difficulties. Manufacturers of paper who give their customers a formula for the preparation of a weak bath have presumably made an experiment with it, and been contented with the first results furnished by the bath, and they are, therefore, considerably astonished when their good paper is subsequently thrown back upon their hands as altogether unserviceable. It is only a practical man of experience that can form an opinion on matters of this kind.

Economists may still put forward their belief in a weak bath and subsequent ammonia fuming, and in adopting this method there is, we must admit, a saving to be experienced. But this plan has also its drawbacks: loss of time during sensitizing and fuming is involved, and much caution is necessary, in the latter operation, not to allow the ammonia to act too long or too briefly upon the paper, as otherwise the tone and vigour of the prints will be very uneven. To the unhealthy character of the ammonia fumes attention should also be called, only photographers are so used to noxious vapours of all kinds that one more or less is of little moment.

To summarise, when we know that a concentrated silver solution never can get out of order, and is a guarantee always for good work; when we know that paper sensitized with it tones beautifully and uniformly in every neutral gold bath; when all operations are thus simplified, and material saved; in short, when in every respect better results are obtained, ought we to continue to bother ourselves with weak baths? Assuredly we think not, and it is to be hoped that the reader is of the same opinion, and will not carry economy so far as to become a vice rather than a virtue, leading in the end to an excess of expenditure rather than anything else.

## Correspondence.

### THE CRISIS IN THE PHOTOGRAPHIC SOCIETY.

SIR,—In your recent comments on the proceedings of the last meeting of the Photographic Society you refer to the sudden renewal of hostilities as the result of a jealous predisposition to take offence on both sides, and you imply that it Mr. Hughes had not asked just at that juncture for explanations as to the position of the "six" on the one hand, or had not Mr. Glaisher "cut up rough" on the other, all might still have been harmony and peace. But, sir, I venture to suggest that in this view of the case the symptoms are mistaken for the cause. Both the things referred to were but the outward and visible signs of a state of feeling on both sides which would have rendered harmonious co-operation impossible. The truth was, that mutual confidence had been destroyed, and whilst outward appearance of reconciliation had been made, distrust really seems to have prevailed on both sides.

What but distrust could have prompted the original initiators of the agitation to summon together their forces for combined action, as I am informed they did? What but distrust could have prompted Mr. Glaisher to claim a unanimous vote from the meeting before he would take the chair? This distrust prevailing, another disruption, sooner or later, was probably inevitable: but it was precipitated by Mr. Glaisher's hasty and unreasonable bearing, by which he lost all the vantage ground for himself and the council which they had hitherto possessed. He held the sympathy of the members at large as an earnest, energetic president, who, in return for zealous service, had been insulted, at the February meeting, in a manner which the malcontents themselves, almost to a man, condemned. The society at large sympathised with him, and with the council who resigned with him. Even with the knowledge that an antagonistic combination existed in the meeting, had he answered the interrogation as to the "six" with any reasonable explanation, it is probable the meeting would have been with him. But, unfortunately, he (to use a slang phrase) "lost his head." The interrogation coming from the same gentleman who had impeached the council in February probably revived all the bitter recollection of the insults heaped on them on that mischievous evening. At any rate,

he took counsel with anger instead of reason, and vehemently declared his resolve not to sit with the "six."

Your conjecture, sir, that as to his alleged objection, that none of the six was a nominee of the council, there must have been some misunderstanding, is, perhaps, ingenious, but, I am afraid, not correct. Whatever he meant, there can be little doubt that this was what he said; and by saying it, and saying it in such an offensive manner, he succeeded in alienating the sympathies of the whole of the meeting. If the members of the council do not endorse his words and action in this matter—and I cannot conceive that they do—they are in a very unfortunate position, especially if, as you have suggested, they are impelled by *esprit de corps* to stay by a leader whose action they condemn. If, when questioned about the "six," Mr. Glaisher had courteously explained that no disrespect was intended to these gentlemen or to the meeting which had elected them, but that the mode of their election was *not en règle*; or if he had said the old council had been asked to "resume" office, and a resumption meant taking the thing up at the point at which they had left it, and that this necessarily involved a restoration of things in *statu quo*, without conditions, and that these six, having been irregularly elected in the interregnum, the old council had no power of recognizing them—if, I say, some courteous and reasonable explanation had been offered, it is probable that the meeting would have been with him, and a rupture would have been avoided.

I am free to admit, however, that with the impression on their minds that the opposition combination had been again summoned to force these "six" into the council, whether the old members of the council accepted them as legal members or not, no real harmony could be expected. If the old council had resumed duties on conditions dictated by the opposition, they might, indeed, have been charged with "clinging to office." Besides, no free action could have taken place in the council if they knew that a "vigilance committee" could be summoned at any moment to act in organized opposition to any steps they might not approve.

What, then, can he do to save the society? The only remedy I can suggest is a short and sharp one: it consists in beginning *de novo*. I have no faith in tinkering. The demon Distrust must be exorcised. The opposition have not complete trust in the old council: the council have not trust in the opposition. And any patched-up peace, any fusion of parties, must issue in failure. When such a state of things prevails in the imperial government, there is but one course, and that is appeal to the country. An appeal to the whole of the members would doubtless satisfy all parties. Any officer elected by the suffrages of all the members would legitimately represent the society, and would cease to represent either the council or the opposition, even if he had been identified with the one or the other before. For these reasons, in this emergency, I recommend at the earliest date a general election. The law (practically) provides for election by the votes of resident members only. It is upon this rock the society has split, and as all law seems to be at an end, this precedent should be ignored, and common sense and good feeling consulted in the appeal to every member of the society.

—Yours obediently,

AN OLD LONDON MEMBER.

## Proceedings of Societies.

### LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE ordinary monthly meeting of this association was held on Tuesday evening, the 28th ult., at the Free Public Library, the Rev. T. B. BANNER in the chair.

The minutes of the previous meeting were read and passed.

Mr. WILKINSON exhibited a number of negatives taken on plates prepared by Mr. Bolton's process. He had succeeded very well with them, but, on varnishing with spirit varnish, the film—owing, no doubt, to the soap in it—rose in small blisters and spoilt the negative. Other varnishes might be used to avoid this.

In reference to two exceedingly fine transparencies which were handed round,

Mr. W. ATKINS made the following remarks:—"At our January meeting I brought for your inspection a number of transparencies prepared by Mr. Bolton's new process. I then stated that Mr. Bolton had prepared, in my presence, a dozen plates in the very short time of seventeen minutes. Five of those plates were used



for transparency printing the same evening; the rest have since remained by me. With the object of again drawing your attention to this important process, I have this evening brought two transparencies in order to afford you an opportunity of judging of the keeping qualities of the emulsion. The previous pictures exhibited were prepared on the 10th of January, from an emulsion made by Mr. Bolton about three weeks previously, and it will, perhaps, be remembered that the exposures given ranged from six seconds to a fraction of a second to gaslight, the object being to test crucially the rapidity of the process. With a moderately dense negative five or six seconds was found to be quite long enough. Since that time, owing to business engagements, I have been unable to do anything in photography until last evening, when I printed the two transparencies I now lay before you. No. 1 is a plate prepared by Mr. Bolton in January, the emulsion being then three weeks old. This plate was exposed under a rather dense negative for ten seconds, the development being effected with a three-grain solution of pyrogallie acid, four drops of a five-grain solution of bromide of potassium, and four drops of ammonia solution (one part of ammonia to twelve of water). No silver was used to intensify, nor any gold to tone it. Plate No. 2 was coated and dried last evening from the remains of the emulsion used by Mr. Bolton on the previous occasion. This has remained in my possession since January, and has been untouched, except to shake it up occasionally. This plate was exposed under the same negative as No. 1, receiving identically the same exposure and development, the final result showing not the least difference between the two plates. The emulsion used is now eighteen weeks old, and has lost none of its original good qualities. It can, I think, be fairly claimed that, having stood the test so long, it will keep indefinitely."

The Rev. H. G. PALMER exhibited some collodio-albumen negatives on plates prepared by a Manchester firm. He liked them very much, and had been very successful with them. The exposure was quick, but the development exceedingly slow.

Mr. GREEN suggested that a number of negatives might be developed together in glass dishes. They could then be examined from time to time, so that the whole would be finished in much the same time as one.

The Rev. J. D. RILEY showed an excellent transparency, taken by Mr. Sutton's moist process.

Mr. CASTELLAIN related his experiences in changing very sensitive plates in a Howard's tent. Although the sun faced the window, the plates showed no signs of fogging.

Mr. ELLERBECK said he had worked the wet process with the tent, but if he coated the plate within the tent, the fumes from the ether made it impossible to work without some covering for the eyes. He thought of having glass or talc fitted to the mast, as there was a difficulty in avoiding dust when coating a plate in the open air.

The council was requested to arrange for an excursion.

The meeting was shortly afterwards adjourned.

## Talk in the Studio.

**A MAGNIFICENT PHOTOGRAPHIC ESTABLISHMENT.**—We learn from *Anthony's Bulletin* that Mr. Kurtz has just erected a new studio in Twenty-third Street, New York, opposite Madison Park. The outlay connected with the completion of the establishment will cost \$130,000, in round numbers upwards of twenty-five thousand pounds.

**PIRACY OF PATENT PROCESSES.**—In our advertising columns will be found a caution to pirates, who, we learn, have for some time been guilty of open infringement of the Ferranti-Turner patent process of finishing photographs. Imitation is always one of the annoying risks which high excellence must incur; and so long as unscrupulous people exist, we presume such contemptible forms of dishonesty will be practised; but we would urge upon the attention of all photographers that when they give commissions to those who avowedly seize and practise processes not their own, they practically share in the piracy. There is a compound dishonesty in infringements of this sort. Not only is the invention which some one else has been at the trouble and cost of working out stolen, but advantage is taken of the publicity which the inventor has given to his work—a publicity never secured without cost of personal effort and money. It is the real interest of all photographers to aid in suppressing such infringements.

**COMPARATIVE INTENSITY OF ELECTRIC LIGHT AND GAS.**—The *Daily News* says:—"Some curious and useful information about the lights displayed from the Clock Tower of the Houses of Parliament is given in a report just made to the House of Commons. It appears that the two semi-lanterns which a spectator at Westminster sees 250 feet above him in the Clock Tower are in the hands of two rivals—one of whom employs gas, and the other electricity, as the source of illuminating power. The Wigham light has three burners, each composed of 108 jets, placed one above another on the same axis. The electric light is produced by an electro-magnetic machine, worked by steam power, the currents being conducted from the machine to the lantern along 1,700 feet of copper wires. The report is decidedly favourable to the electro-magnetic process. Thus Mr. Douglas states that the electric light has a superior intensity of 65 per cent. when one 108 jet burner is used, and of 27 per cent. when three are employed. So, again, as to cost, the electric method produces a saving of 162 per cent., measured in cost per candle per hour, when one 108 jet gas burner, and of 133 per cent. when three jet burners are used."

**AMERICAN OBSERVATIONS OF THE TRANSIT OF VENUS.**—Mr. R. A. Proctor, writing to the daily papers, says:—"It is already known that the American Government has granted for the purpose a sum (150,000 dols.) nearly twice as great as that which has been demanded by English astronomers from our own Government. America will occupy eight stations, four in the northern and four in the southern hemisphere. At all of these the whole transit will be visible—America being the only nation which has rejected Delisle's method altogether (though England alone now attaches special value to that method, hitherto so unsatisfactory in its results). The idea of occupying Macdonald Island having been abandoned by the authorities at Greenwich, America will join with Germany in establishing stations in that island; and the circumstances which have been regarded at Greenwich as insuperable obstacles to the occupying of the Crozots have not frightened America from the attempt to occupy that post of difficulty and honour. The invitation addressed by Sir George Airy to America to occupy two Delisle stations in the Pacific has not been acceded to."

**A CANINE SITTER.**—The *Boston Traveller* relates the following dog story:—"G. F. Richardson, of Lowell, owns a magnificent Newfoundland dog. Mrs. Richardson took the children and dog to the photographic saloon to have the group taken; but the dog was in a willful mood, and would not pose, and was turned out. The next day the dog put in an appearance at the saloon and scratched at the door till he was admitted; he then proceeded directly to the spot assigned him the day before, and placed himself in the exact position desired by the artist. The photograph was taken, and when completed put into a box and given to the dog, who carried it directly to his master."

**REDUCING WASTE BY GALVANISM.**—Mr. E. Böttcher, secretary of the German Photographic Association in New York, writes to *Anthony's Bulletin* as follows:—"Messrs. Kurtz and Kleihans have obtained at the Patent Office, in Washington, a caveat for precipitating metallic gold and silver out of spent photographic solutions by means of galvanic batteries. This caveat the above gentlemen have turned over to the German Photographic Association, and this association permits every photographer in the land to use such galvanic batteries for the purpose named. Presuming that every photographer knows enough about galvanic batteries to make a long description unnecessary, I would mention that a Smee's battery is the most desirable. It will work for four to eight weeks without interruption; then it may be found necessary to supply a fresh solution of sulphuric acid and to amalgamate the zinc plates. Besides the first cost of about \$5 00, there is no further expense worth mentioning. The whole process is simple and cheap, and does away not only with the noxious sulphuret of potassium itself, but with the royalty attached to its use also."

**TO CLEAN BOTTLES.**—A correspondent of the *Philadelphia Photographer* says:—"To clean a silver bottle, pour in a strong solution of cyanide; shake a few times, pour out, and rinse with water two or three times, and your bottle is perfectly clean. Keep the solution, and filter and strengthen when required. By doing this you can sun your bath better in two hours than in a week's exposure in the dirty black bottles photographers appear to delight in."



## To Correspondents.

**A SUBSCRIBER FROM THE FIRST.**—By lime water is meant the ordinary lime water which a chemist will supply you under that name, or which you can prepare by placing quicklime in water, which will dissolve a mere trace of the alkali—less than a grain per ounce.

**W. W.**—The usual strength of Beaufoy's acetic acid is about one-third of the strength of the glacial acid. 2. A brown tone by reflected light on developed collodion prints is not easy to secure. Some approximation to brown may be obtained by toning with a sulphide of ammonium or potassium. A brown tone may also be obtained by the use of Selle's intensifier. 3. Any good bromo-iodized collodion may be used for producing collodion prints. 4. What is meant is a solution of nitrate of silver and citric acid, with the latter in excess. If a solution be made with twenty grains of nitrate of silver and twenty grains of citric acid per ounce, there is often a tendency to deposit citrate of silver; but if thirty grains of citric acid be used, it will generally prevent any precipitate taking place. 5. A ten per cent. solution contains forty-eight grains per ounce. In the formula in question you will add an ounce of nitrate of silver and an ounce of acetic acid to ten ounces of water. 6. If the plates are used fresh, the final application of the gallic acid and chloride solution is not required.

**A CONSTANT SUBSCRIBER IN THE COUNTRY.**—Our advertising pages will furnish you the best and fullest information.

**JOHN STONE.**—The precise proportion of water to chloride of gold in a toning bath is not of vital importance. A strong bath works rapidly, and a weak one slowly, and different operators have varied preferences in this respect. Varying from five ounces to ten ounces of water to each grain of chloride of gold may be regarded as convenient average limits. We never recommend carbonate of soda to be used in a toning bath, as it produces a solution which must be used within a few hours of mixing, and a toning bath which will keep is in every way preferable. It is of very little importance whether you use one or two grains of the carbonate, if you use it at all. The solution with two grains will probably become inert sooner than the solution with but one grain.

**W. C.**—You will require the permission of the authorities of the Inland Revenue department to have a still on your premises; but that permission obtained, you will not have to pay for any license.

**G. WILLIAMS.**—The defect in question may arise from various causes, but it is chiefly due to the collodion, which is manifestly of the tough, horny kind, yielding a repellent film. Sometimes the addition of a few drops of distilled water to each ounce of the collodion will effect a cure; sometimes the addition of a little of a collodion giving a rotten or powdery film will mend matters. Immersing the plate in the bath before it is as much set as usual is often useful. The plate should rest on pieces of clean blotting-paper, and the inner frames should be frequently washed with clear water. You will find that many articles have been written on the various causes of these matt silver stains in back volumes.

**PIERRE REYON.**—We do not remember any specific report upon the toxic qualities of pyrogallol acid. Although it is well understood to be a poison, we have no means of verifying the statement that it is as active and virulent a poison as strychnine and similar alkaloids. 2. In the development of wet collodion plates pyrogallol acid may be entirely dispensed with, and in the establishments of many portraitists it has been entirely replaced with iron. In the development of some dry plates, however, pyrogallol acid is at the present time a necessary aid. Even with those dry plates in which a large proportion of ammonia is found valuable in development, some pyrogallol acid is found necessary, and with many dry plates this mode of working does not answer. Almost all the chemicals employed by the photographer are active poisons, some in greater degree than others; and whilst it is desirable to avoid, if possible, the use of the most dangerous, especially those which are injurious when brought into contact with the skin, or which give off poisonous fumes—such as cyanide of potassium—we fear that the possibly dangerous character of pyrogallol acid will scarcely exclude it from the operating room. There is no record, that we know of, of a case of poisoning by pyrogallol acid. We do not know of any proposed antidote, but will endeavour to ascertain if turpentine really counteracts its effects. We hope to have a few remarks on the advantages of collodio-chloride shortly.

**CRACKING.**—The tendency to crack is partly due to the use of a very highly albumenized paper. To prevent it, be careful not to allow the sheets of albumenized paper to hang until they are bone dry. Before they are absolutely dry, place them one upon another, and cover with a board and a weight. After printing and washing, mount the prints before they are absolutely dry. By these precautions you will prevent cracking, even when there is a great tendency to this defect. A fresh sample of paper will also probably relieve you.

**E. L.**—Your silver bath is too weak, and apparently you are working with a small quantity in the dish; hence the weak, poor prints, and the irregular, mottled effect. Remember that your bath perpetually requires renewing, as from thirty to forty grains of nitrate of silver are abstracted by each whole sheet of paper sensitized. See article by Herr Kleffel in the present number.

**H. J. GODBOLD.**—Thanks for sight of the Yokohama Directory. We will forward it as instructed, and will send prints for examination.

**N. J. E.**—The image is quite out of focus. Either you have not focussed carefully, or you have moved the camera after focussing, or the sitter has moved his head after you have focussed, or your ground glass and sensitive plate are not in precisely the same plane, or the visual and chemical foci of your lens do not correspond. It is impossible for us to say which; you must ascertain which by careful observation of experiments undertaken for the purpose. Try, for instance, focussing carefully some inanimate object that cannot move. If, after careful focussing, the negative is not sharp, next examine carefully to ascertain that the sensitive plate occupies precisely the same position as the ground glass. Take out the lens and measure very carefully the distance of the ground glass from the flange of the lens. Then put a plate of glass in the dark slide, withdraw the shutter, and measure if the distance is precisely the same. If this be correct, try again, and after focussing move the lens slightly in or out as the picture indicates. The lenses of all good makers are, however, as a rule, coincident in chemical and visual foci. 2. As a beginner, you will find it wise to procure, if possible, one good negative as a standard to work to.

**M. M.**—The chief fault in your vignettes is the use of a background screen much too dark, hence there is no satisfactory gradation into the white of the margin. A very light screen should always be used for vignettes.

**P. W. S.**—There is no restriction whatever as to the production of cameo vignette pictures. The process is free to every one.

**G. D.**—Many thanks.

**DR. NICOL.**—In our next.

Several Correspondents in our next.

## METEOROLOGICAL REPORT FOR APRIL.

BY WILLIAM HENRY WATSON.

Observations taken at Braystones, near Whitehaven, 36 feet above sea level.

Date.	Morning.	Noon.	Night.	Direction of Wind at 9 a.m.	
1	42°	48°	46°	N.N.W.	Rain a.m. and p.m. Very heavy at night.
2	48	48	46	S.W.	Heavy rain a.m. and p.m.
3	44	48	42	S.	A little rain this evening.
4	42	50	44	N.W.	Heavy hail showers this morning.
5	46	50	45	S.	Distant thunder and heavy hail this afternoon.
6	44	51	45	S.W.	Fair all day. Sunny.
7	46	50	42	—	Heavy rain this evening.
8	44	51	46	S.	Fair all day. Gloomy.
9	45	—	43	S.	Heavy rain this morning.
10	47	52	44	S.	Rain at night.
11	46	49	44	S.W.	Rain a.m. and p.m.
12	42	50	39	N.W.	Fair all day. Sunny.
13	38	52	43	N.N.W.	Heavy rain a.m. Sleet.
14	45	50	39	N.	Fair all day. Sunny.
15	44	—	49	S.S.W.	Heavy rain this evening.
16	49	51	49	N.W.	Fair all day. Sunny.
17	49	49	49	S.	Rain p.m.
18	49	50	49	S.	Rain this evening.
19	52	56	51	S.	Rain this morning.
20	54	58	56	S.W.	Fair all day. Sunny.
21	58	60	51	S.	Fair and sunny all day.
22	51	58	51	S.W.	Fair and sunny all day.
23	58	—	53	S.E.	Fair and sunny all day. Rather hazy.
24	54	61	53	S.	Rain a.m.
25	63	69	64	S.	Rain a.m. Very sultry. Distant thunder this evening.
26	68	68	64	S.S.W.	Fair and sunny all day.
27	67	71	64	S.	Fair and sunny all day.
28	63	68	54	S.	Fair and sunny all day.
29	53	60	43	S.S.W.	Fair and sunny all day.
30	53	60	53	W.	Fair and sunny all day.

We arrive at the following from the above data:—

	Mornings.	Noons.	Nights.
Maximum temperature during the month	68°	71°	64°
Minimum ditto ditto	38	48	39
Mean ditto ditto	49.3	55.1	48.7

Number of days on which rain fell ... .. 16

Number of days on which no rain fell ... .. 14

Number of fair days on which it was sunny ... .. 13

Number of fair days on which it was gloomy ... .. 1

Owing to the unusually warm weather at the end of April, special registrations of the thermometer were taken, exposed to the sun at 12 o'clock on the following days:—

April 25th ... .. 94°

" 26th ... .. 94

" 27th ... .. 103

" 28th ... .. 99

" 29th ... .. 90

" Wind from S. and S.W. prevailed.



## The Photographic News, May 15, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

XYLONITE—PROTECTION OF SILVER PRINTS—INFANTS' PORTRAITS—THE SUBSTITUTION PROCESS IN ENAMEL PHOTOGRAPHY—PHOTOGRAPHIC TRANSPARENCIES.

*Xylonite.*—There seems to be no limit to the applications of collodion and castor oil, irrespective of the uses to which photographers put *collodion cuir*. Mixed with zinc white, or other suitable materials, it is applied to as many purposes as ebonite, vulcanite, and other forms of hardened rubber; at the same time the xylonite, or parkesine, as it is commercially called, has this great advantage over caoutchouc preparations, *viz.*, that it is free from the offensive smell of the latter, and possesses, indeed, a camphorated odour, which is really agreeable. We have already noticed the many uses to which parkesine, when prepared of a white opaque nature, is put, being an efficient substitute, in many instances, for ivory, in the case, for instance, of knife handles, pianoforte keys, and the like; but the latest application of all is one more curious still, for it has been found possible to manufacture artificial quill tubes from the plastic material. We are not aware of the proportions of oil and collodion employed, nor what other ingredients are added, but the result is a tough elastic tube, which answers most purposes of the quill, except, possibly, that of a pen. For military and mining fuzes, for camel-hair pencils, and other commercial purposes, these artificial quills appear exceedingly suitable; and when it is borne in mind that the price of the material is but a few shillings per pound, there can be no doubt about a demand for goose and swan's quills made from soluble guncotton. Strange to say, that, notwithstanding the combustible character of its principal constituents, pyroxiline, ether, and alcohol, the material does not burn with greater fierceness than tar, rubber, and such like substances. It would be a famous material for photographer's utensils, and being white, one could always rely upon the same being perfectly clean.

*Protection of Silver Prints.*—There can be no question that the covering of silver prints with a coating of wax or varnish is an excellent method of ensuring their preservation. Let a silver print be washed ever so well, contact at any time with a vitiated atmosphere must always imperil its existence. And this holds good, whether the print is upon albumen, collodion, or any other basis. In a collodio-chloride picture the image is more imbedded in the film than in the case of albumenized paper, and must consequently be more protected from noxious vapours; and where the former have been found to fade and turn yellow, they have most probably been subjected constantly to the air of a gas-lit apartment, or exposed in other contaminated localities. Any surface of metallic silver, if exposed in our dwelling houses continually, soon tarnishes, as we all know, and under these circumstances it is really a matter for astonishment that silver photographs in our libraries, dining rooms, &c., last so long. The bright silvered ornaments worn by officers at a review or field-day are at once tarnished if any firing takes place, the fine particles of silver upon the surface becoming terribly discoloured by the sulphur fumes carried into the air at every discharge of fire-arms; and if the silver is in a frosted condition, the metallic particles lying loosely upon the surface, an immediate cleaning of the ornaments becomes necessary, so seriously are they attacked by the atmosphere. It is true, in a photograph we do not have the silver in its white metallic form, nor is it in a perfectly pure state, but, nevertheless, any trace of sulphurous acid in the atmosphere must exert an injurious action upon a film so thin, and sulphur—or sulphurous acid, rather—is by no means a rare constituent of the air breathed in large towns; most coal and coke contains as much as one per cent. of sulphur, and consequently for every hundred tons of fuel consumed

in our cities one ton of sulphur is liberated in a gaseous form. The waxing of a print and rubbing of its surface, or otherwise protecting it from the air, must, then, it cannot be doubted, have a most important influence upon its durability.

*Infants' Portraits.*—Some pretty portraits of children we have lately seen, taken by an amateur, which deserve to be mentioned. In depicting very young infants, it is indispensable almost to take the mother or nurse also, and the difficulty of securing a satisfactory picture of the two is generally very great. Whether carried in the arms, or on the lap, the child's features are rarely on the same plane as the mother's, and if the head of one is in the centre of the plate, that of the other is not, while both are usually shown full-face. These difficulties were overcome, in the series of pictures we allude to, by throwing the infant over the shoulder, the mother's face being turned in profile towards the baby. Besides being a very natural pose, the face of the little one assumes a quiet, contented mood, and is fully shown, while the person of lesser importance is at any rate well seen, the two heads being differently rendered. So as not to show too much of the back of the adult sitter, the pictures were printed in small vignettes. This hint may be of use to those who are troubled with baby sitters.

*The Substitution Process in Enamel Photography.*—In employing the substitution process in enamel photography, it might be well to consider whether the aid of electricity could not be made use of, as in the electrotype process. There is no difficulty, under ordinary circumstances, of throwing down gold or platinum particles upon the silver image, but others of the precious metal group are not so easy to precipitate. With the aid, however, of a gentle electric current it might be possible to press into the service a wider range of metals, connecting the film covered with the metallic image with one pole of a battery, while the other is immersed in a solution of the metallic salt to be precipitated. Only a very weak current of electricity could be used, no doubt, otherwise the metal would be thrown down in too coarse a condition. A few experiments in this direction would, we think, be well worth trying.

*Photographic Transparencies.*—A silver medal is to be given at Vienna for photographic transparencies this year, such as are adapted for employment in the magic lantern, the subjects of the slides, apparently, being of less importance than the process by which they are produced. It is different, now-a-days, to the time when albumen was the only material that could be made to yield good positive transparencies, for now the same may easily be produced by several methods exclusive of those involving the use of albumen or collodion. There is the carbon process, by means of which the prettiest translucent pictures may be secured, of any desirable tint, by simple immersion of the fixed gelatine print upon glass in any of the aniline dyes. Then there is the Woodburytype process, in which similar photographs may be produced in any quantity as readily as prints upon paper. Finally, there is the powder process, that might be employed for the same purpose. In silver printing, Mr. York and Mr. Feneley have considerably distinguished themselves in this branch of photography, although the method of printing, we have always regretted, has never been so largely cultivated here as in Paris, where the firm of Léon and Levy supply by far the greater portion of the beautiful transparencies one sees everywhere. To our thinking, a photograph never looks so well, or is seen to such advantage, as in the form of a transparency, either in or out of the stereoscope, and it is much to be deplored, therefore, that in this country so little attention is bestowed on their production. Photographers in this country who desire to compete for this, or indeed any of the Voigtlander medals that are yearly distributed by the Vienna Photographic Society, must bear in mind that, to be qualified candidates, they must



first take up the membership of that society, of which M. Fritz Luckhardt, the well known portraitist, is secretary. The details concerning the medals to be distributed this year by the society were given in these columns a fortnight back.

#### FRENCH CORRESPONDENCE.

THE process of enlarging and retouching invented by M. Lambert, of which I spoke in the *Moniteur de la Photographie*, and to which you referred in a recent number of the PHOTOGRAPHIC NEWS, is a matter which engages the attention of Parisian photographers at the present moment. For two years past they have admired the results obtained by this method, without being able to divine how they were obtained; and if the secret has not been discovered, it was not for want of searching for it. These experiments have, nevertheless, not been unfruitful, but have led to various improvements, such as the employment of opaline glass and retouching upon this material: such processes as MM. Liebert and Depaquis have brought forward. To-day, thanks to the patent taken out by M. Lambert, everybody may, by taking out a license, make use of the process. The list of subscribers is already very numerous, and includes many of the best known photographers in Paris and in the provinces. Among the latter is an English artist, Mr. Mevins, who has purchased the right of working the process at Rennes, where he is established.

In reference to the observations of M. Thierry upon the silver bath and coagulation of albumen, which I referred to in my last letter, two further communications have reached me. The first is from a very skilful amateur, M. Quiquerez (of Nonancourt), and the second from a chemist of experience, M. Encausse.

M. Quiquerez remarks, that for a long time past alcohol has been cited for the purpose of coagulating the surface of albumenized paper. But if the alcohol coagulates liquid albumen, it is not the case when the substance is dry. He thinks that a dilute alcohol bath would have a very feeble action upon albumenized paper. The best course would be for manufacturers to supply a satisfactory coagulated paper, for the paper of this description usually sold is of a yellowish tint, and lacks brilliancy. M. Quiquerez thinks that these defects are due to the high temperature which is employed for coagulating the albumen. He sends me some specimens of a very brilliant nature, printed upon paper of this kind, sensitized in a bath of four per cent. strength only, to which six or seven per cent. of nitrate of potash had been added. This bath is always allowed to remain exposed to the light, and does not become discoloured even when non-coagulated and strongly albumenized paper is floated upon it. The excellent clichés which have served for the printing of these impressions were obtained with wet collodion, developed by means of a compound made up of—

Distilled water	...	...	1,000 grammes
Sulphate of iron	...	...	25 "
Sulphate of copper	...	...	10 "

The above is dissolved, and to the solution is added :

Alcohol	...	...	45 cub. cents.
Glacial acetic acid	...	...	25 "
Liquid ammonia	...	...	7 "

This is shaken, allowed to repose for the night, and then filtered. The solution does not keep very long, and yields very fine images, of a density almost always sufficient for printing purposes.

But to return to the question of albumenized paper and silver baths. M. Encausse is altogether opposed to a neutral bath. Having had in his possession prints which had become altogether perished, he instituted a microscopical examination of them, and found portions of the surface denuded of albumen. He believes this to be due to an

imperfect coagulation at the moment when the paper is albumenized, and to assure himself of the fact he made the following experiments. He took a piece of five paper, the material of which appeared suitable for photographic purposes, and this he treated with albumen, of which he had three samples. The first was pure albumen which had been chlorised by a mixture of chloride of sodium to the extent of three per cent.; and paper treated with this had a very brilliant surface. The second sample of albumen was mixed with ten per cent. of its weight of distilled water, and, like the first, salted with three per cent. of chloride of sodium; this furnished a more uniform paper, but one of a less brilliant nature. The third preparation was mixed with twenty per cent. by weight of distilled water, and salted in like manner to the others.

By preparing three samples of paper in this way he desired to test the action of the nitrate of silver upon the different thicknesses of albumen, and he was enabled to determine that, in all three specimens, the albumen was not completely coagulated in baths possessed of the same degree of acidity. The thickness of the albumen upon the paper is insignificant in respect to the solidity of the prints. M. Encausse took crystallized nitrate of silver, which may be said to consist of 635 milligrammes of silver, and 365 milligrammes of nitrogen and oxygen, for every gramme of crystallized nitrate of silver. The silver transformed into chloride is neutral, and, consequently, is without action upon the albumen, and there remain, therefore, the 365 milligrammes of nitrogen and oxygen as active principle for the coagulation of the albumen. M. Encausse prepared a bath composed of—

Distilled water	...	...	100 grammes
Monohydrated nitric acid	...	...	369 milligrammes

He floated, for a period of twenty minutes, several sheets of the three kinds of albumenized paper, which were dried with care, and then washed them in distilled water. The rinsings, treated with nitric acid, revealed the presence of considerable quantities of albumen, proving that imperfect coagulation had taken place. M. Encausse pursued the operation, augmenting, with each experiment, the nitric acid by 365 milligrammes, and he found the quantity of albumen decreased sensibly until he had reached the amount of 3,650 milligrammes of monohydrated nitric acid, which corresponds to ten grammes of crystallized nitrate of silver dissolved in 100 grammes of water. These experiments show, therefore, that non-coagulated albumen easily dissolves in ordinary water, and, therefore, it will be acted upon in the toning and fixing baths. It is true that, after the action of light, the film of metallic silver, wherever present, preserves the surface; but this film cannot be retained nor solidified in those parts where the albumen is not coagulated.

At the last meeting of the French Photographic Society, on the 1st of May, M. Derogy exhibited an apparatus most ingeniously constructed from a design of his own. It is a mirror and heliostat for producing photographic enlargements. The instrument is fitted on a stand, allowing one to give the mirror any incline that may be desired, according to the height of the sun in various seasons of the year. This inclination once fixed, a clock-work movement in connection with the instrument sets it at work from morning till noon, and again from noon till evening, imparting to the mirror the requisite incline, and circular movement necessary. In this way the path of the sun is followed with the utmost regularity, and its rays directed constantly in one direction, so that, with the light afforded, enlargements more clear and on a larger scale may be secured than with the ordinary enlarging apparatus.

The instrument may also be constructed without the clockwork movement; in this case, after the mirror has been properly inclined according to the height of the sun, there remains but the circular movement to be undertaken by hand. To the reflecting apparatus is connected a



camera carrying a condenser, and a lens by means of which the enlargements are obtained.

I have just received from M. Léon Vidal a photo-chromic print, which indicates that immense progress has been made in the application of the process by the eminent founder of the Marseilles Photographie Society. If perfection has not been arrived at, at any rate it is not far off. The image of which I have spoken is the reproduction of a painting by Carl Müller, representing Faust and Marguerite in a snowy landscape; not only are the personages and landscape produced with a truth which the best water colour painting could not surpass, but the marvellous effects of oil painting are also well rendered. With such a result before one's eyes, one cannot but think that photo-chromy will speedily supersede chromo-lithography.

ERNEST LACAN.

## THE PREPARATION OF DIFFRACTION GRATINGS.

BY LORD RAYLEIGH, F.R.S.\*

IN the case of developed plates there is more choice of lights, in consequence of the higher sensitiveness. I have used successfully cloud or skylight reflected horizontally from the zenith by a mirror through a hole of two or three inches diameter in the shutter of a darkened room, the frame being set up in a vertical plane at a few feet distance. The principal objection to this plan is the difficulty of estimating the exposure with proper precision—a difficulty which is more felt than in ordinary photography, as it is convenient to develop a good many copies at once. On a really fine day the image of the sun formed by a condensing-lens of short focus placed in the shutter (as used in diffraction experiments) constitutes a very convenient source of light. As the exposure is only a few seconds, there is no difficulty in dodging isolated clouds, whose progress may be watched from within by examining their image with a coloured glass. When there is any haze, this method is not more satisfactory than the other.

With the more sensitive processes artificial light may be employed. I have done a good many copies by the aid of a moderator-lamp (without the globe) at two feet distance from the frame. An Argand gas-flame would probably be still better.

The printing-frame I employ has a thick plate-glass front, against which the original grating and prepared plate are pressed by screws. These are more under control than the springs generally used in the common printing-frames. When everything is ready, the original is placed on the glass front of the frame with the engraved face upwards, care being taken to exclude all grit by means of a camel's-hair brush. The prepared plate is then placed face downwards on the grating, then a pad to equalize the pressure (I have used one of india-rubber), and on the pad the rigid back of the frame, on which the screws are made to press with a moderate force. When the film is delicate, care should be taken to place it in the proper position at once without sliding.

The two surfaces of the plate-glass front of the printing-frame and the back of the original grating may be cleaned in the ordinary way with a soft cloth or wash-leather; but the engraved face of the grating requires more delicate treatment. If touched at all with a solid (wash-leather), the greatest care should be used. I prefer to wash it, when soiled, with a stream of water from a tap, afterwards flooding it with pure alcohol and setting it up to dry spontaneously. Sometimes I have found nitric acid useful; but I always try to avoid the rubbing contact of a solid. These precautions have been so successful that, after several hundred copies have been taken, the originals have scarcely, if at all, deteriorated.

For the support of the photographic film, it is, no doubt, most satisfactory to use optically worked "parallel" glass.

Ordinary glass would fail, for two reasons. In the first place it would generally be impossible to secure a sufficiently close contact in the printing. But even if this difficulty could be surmounted, the spectrum given by the copy would not bear the magnifying power which it is generally desirable to apply. It is, indeed, evident that the glass support of the grating requires the same precision of workmanship as the object glass of the telescope used in conjunction with it.

Although ordinary glass taken at random is inadmissible, I have done a great number of excellent gratings on selected pieces of patent plate. In order to choose the best, I lay the plates on the table in such a position that the bars of a window or skylight are seen reflected in them. Each bar appears, in general, double, one image corresponding to each surface. By sliding the plate about, while the head is kept still, irregularities are easily detected by the shifting or curvature of the images. From a package of two dozen five-by-four plates, as issued by photographic dealers, three or four often lying together may usually be selected as flat enough for the purpose, or, at any rate, decidedly superior to the remainder. It is worth notice that the object aimed at is *flatness* of the two faces, exact *parallelism* being of much less consequence; for it is evident that the interposition of a truly worked prism of very acute angle would produce no evil result. A glass is therefore not to be rejected merely because the two images of the bar seen reflected in it are decidedly separated. The question is rather whether this separation remains constant as the plate is moved about without rotation. I have never seen a piece of patent plate that could not be at once distinguished from worked glass in the way described; so that the test is abundantly sufficient for the purpose. The more delicate methods by which worked glass is examined would be less practically useful.

Whatever kind of glass be used, if the photographic process be at all complicated, there is considerable economy of labour in preparing comparatively large pieces, to be afterwards cut with the diamond to the required size. A five-by-four, or even a four-and-a-quarter by three-and-a-quarter plate will do very well for four gratings. In the case of worked glass, economy is an object; but when patent plate is used, I should recommend five-by-four glasses, as a margin is convenient. Even when, as in the collodion-chloride process to be presently described, the plate for each grating is prepared separately, it is convenient to perform the preliminary operations of cleaning and albumenizing on larger pieces. The cutting of prepared plates requires a little care. I place them face downwards on a sheet of clean paper, make the diamond cuts on the back, and then, before breaking, remove as much as possible of the glass powder. As it is important to prevent any grit from getting between the film and the engraved face of the original, I usually brush the surface with a large camel's-hair brush kept scrupulously clean.

In the preparation of the plates I have used a considerable variety of methods. The process with gelatine and bichromate of potash, described in my previous papers, has decided advantages; but all my efforts to obtain a mastery of it have been unavailing. Plates prepared to all appearance in precisely the same manner, and even, at the same time, turned out differently, while modifications purposely introduced seemed to be, for the most part, without effect. It required a strong scientific prejudice to hold the uniformity of nature in the face of so much adverse evidence. The uncertainty of this method is provoking, as some of the results are exceedingly good; but I gave up my attempts sooner than I might otherwise have done, in consequence of the discovery of another method by which most of the advantages of the gelatine process—namely, simplicity of manipulation and brilliancy of results—might be attained with much less risk of failure.

It is very possible that a photographer skilled in the employment of gelatine might succeed where I failed. In case any such should wish to make the attempt, I will mention

\* Continued from page 221.



a few points that seemed important. The solution of gelatine should be carefully filtered. For thick liquids containing gelatine, albumen, &c., the best filtering material that I know of is tow. The tow should be cleaned from grease by boiling with soda and subsequent washing, and a small plugget of it pushed with moderate force into the neck of the funnel. Some arrangement must be adopted for keeping the gelatine hot, or the operation will hardly succeed. It is important that the coat of gelatine should be even, for which object the glass must be free from grease, and the plate on which the prepared glasses are put away to set perfectly level. Even then a good deal depends on the manipulation; but this is soon learned. The uniformity of the coat may be tested by the colour when the plate is placed on a sheet of white paper and examined in a weak white light. By candlelight the colour of weak bichromate of potash is scarcely visible. The exposure may be from two to six minutes to the direct rays of the sun. I have not been able to detect any deterioration when the plates were kept a few days in the dark before being used.

(To be continued.)

### HINTS UNDER THE SKYLIGHT.—THE EYES.

BY R. J. CHUTE.\*

UNDER this head I recently made some observations on the general management of the eyes; I now come to the consideration of some special cases that require special treatment.

The first of these is crossed eyes, or eyes that one or both are turned. Generally it is desirable to overcome a difficulty of this kind, so that the deformity may not appear in the picture, and it is not the least of the artist's trials sometimes to accomplish this satisfactorily. Where the eyes are badly twisted, both perhaps being turned in or out, the easiest and most effectual method of overcoming the difficulty is to make a profile, if the face will at all admit of it, being careful to place the eye-rest so that the eye that shows will appear to be in a natural position. In such cases as are illustrated by the annexed figure, where



one eye only appears to be affected, they may be made to appear quite straight and natural. By placing the rest at A, one eye will appear to be looking directly forward, while the other seems to look at B. Now by carrying the rest to C the twisted eye will be brought to D, and the difference between them will be so equalized that oftentimes no fault is perceptible in the picture.

Secondly, serious difficulty is often experienced in photographing eye glasses and spectacles. This has been so general that many artists keep a supply of frames, of various patterns, without glasses, to substitute for those worn by the sitter when required. This is well, and is a much less evil than to produce the eyes blank by reflections in the glasses. But to this there is objection in many cases. If the sitter is used to wearing glasses, his eyes are much more easy and natural with them than without. Some persons can distinguish no object whatever at any distance with the naked eye, hence, when an effort is made to look where nothing can be seen, the eye is wearied, and has a strained, unnatural expression, which affects the whole face. Usually a more successful sitting can be had when the sitter's own glasses can be used, and with few exceptions they may with care be

used with perfect success. Glasses that have a very convex surface are the most difficult, as they gather reflection from so wide an angle. Ordinarily, however, a little manipulation is all that is necessary; and this is brought to bear in so poising the glasses that all reflections will be avoided. By raising or lowering them, by tipping them forward or back, they may be brought into such position as to give the eye perfectly clear. But it must be remembered that this cannot be done without attention to the surroundings in the studio. If there be a light carpet, light screens, or light walls, their surfaces will be reflected in the glasses, and all efforts to avoid it will be fruitless, except by the removal or covering of the reflecting surfaces. Light from the carpet may be avoided by spreading a dark covering over it in front of the sitter for the occasion; screens and walls may be covered by placing a small dark screen near the sitter. But not the least important item in this connection is what the artist himself may wear. A light coat on his back is mirrored in the glasses, or in the eye even, and yet he wonders where the reflections come from! He who wants his pictures free from reflected lights in the eyes will do well to see that they are not produced by anything his fancy or convenience may induce him to put on. Dark drapery is said to be best for the sitter: it certainly is best for the operator.

Thirdly, weak and squinting eyes are often very perplexing, photographically. The first of these must be turned as much as possible from the light, and if disposed to wink very much, which is generally the case, the sitting must be made very short. A dark screen in front of the sitter is a great relief to weak eyes. In cases of this kind care should be taken, too, to see that the sitter does not fix the eyes on any point until the plate is ready to be exposed. This is a point that I fear is too often overlooked, and the sitter is allowed to "gaze" at some object from the time he takes his seat till the whole operation is through with. There are many matters of this kind that affect the comfort of the sitter, and have more or less influence in determining the degree of success in the sitting. A liberal investment of courtesy, patience, and consideration of the feelings and comfort of those who place themselves in our hands for so personal an interview as sitting for their photograph will pay a good dividend.

### CURIOUS CUSTOMERS.—"THE FAMILY MAN."

BY WILLIAM REICHWAY.\*

THE consideration that the "family man" is an extremely useful animal—indeed, I might put it that he is almost an indispensable specimen of the *genus homo*—ought to reconcile us to the little inconveniences his advent in our gallery invariably puts us to; but, alas! we are such an irritable, discontented, and misanthropic class that we do not see any beauty in the sight of that comfortable and portly personage, accompanied by an anxious and loving progeny who direct his movements and assume the responsibility of his appearance, deportment, and expression.

*Scene the First.*—They enter the reception room to select the style for dear pa's picture. Here each one has his or her idea of the style best calculated to do full justice to pa's peculiar form of beauty. "We must have the chiaroscuro effect, for that is splendid for one whose features are bold and prominent as father's," declares the heir to the domains, a youth who, in virtue of his important position in the family, affects a loud tone and a knowing air. "Oh, pa, you must have some of those sweet vignettes—they are so poetic," urges sweet feminine eighteen, who is suspected of unrequited affection and a broken heart, which has brought out a wealth of poetic feeling in the young lady. Others declare in favour of the three-quarter length standing, while others think that the head and breast is far better; and mamma is of decided opinion that papa's legs are so good that he ought to be taken full length.

\* Continued from page 173.

\* The Photographer's Friend



*Scene Two* finds them all hard at work directing the artist in his labours. "Oh, you know, Mr. Photographer, the only good view of our father's face is quite full"—this is the opinion of the eldest hopeful; but the young lady of the poetic temperament suggests, "Now don't you think the three-quarter face, showing the left side, is over so much more classical?" "Oh, no," says master Reginald, who, being a clerk in a wholesale bookseller's, is therefore thoroughly æsthetic in his tastes. "Oh dear, no! the other side is far better." All the other members of the family train have their peculiar ideas, and as no two agree on any point raised, things look very hilly, and there is music in the air as they grow disputatious. Poor Mr. Artist, who has been trying to bring matters to a focus in a vain endeavour to please everybody, finds that he can make no headway at all until he clears out the disputants—a thing he ought to have done long ago. He makes several views of the head of the family's head, and thus provides argument for a lively

*Third Scene*—the judgment on the proof. In this, all the ingenuity of objection is brought to bear on the pictures shown. One is a little too full face, and another barely enough; yet another would be excellent if the slivet had no shadow on it, while there is not a shadow of doubt that another would be more artistic if there was shading to the "biled rag;" and how nice this one would be, if the necktie were straighter, and what a pity pa's nose looks so crooked in that one. Oh! what a beautiful time one enjoys when four or five individuals of healthy imagination, and not too modest utterance of thought, sit in judgment of our work! What a pleasure it is to hear their caudid opinion of our artistic abilities! I think there is nothing so well calculated to extract from a man's composition any little superfluous self-conceit with which it may be embellished, as listening to criticism on proofs; nor is there a more pious penance for sins of vanity and vain-glory than showing proofs to the loving relations of the family man. Thank heaven! the sitter himself does not trouble the discussion with any views of his own, but leaves the decision to his olive branches, with—"Please yourselves, children, and I am satisfied;" but the worst of it is, that, like the deaf adder, they refuse to be charmed, be you charming as you please—though the chances are about a thousand to one that you are anything but charming under the circumstances. If they do, at last, determine on a selection, they won't like your prints, and then there is another scene. In fact, there is no end of scenes until they are no more scene (I should say seen, but the subject has agitated me so that I hardly know what I write). When you see the family man enter your gallery, summon all your forbearance and tenderness, and lay in a good supply of the Christian virtues; and by all means swallow a soothing powder, or you are lost. Make all suug below and aloft, and look out for dirty weather.

#### MR. HADOW'S METHOD OF RECOVERING WASTE.

MR. JEX BARDWELL gives in *Anthony's Bulletin* a method of recovering silver from waste which was, he states, published by Mr. Hadow ten years ago, and has proved in his (Mr. Bardwell's) hands successful. He says:—

"From the frequency with which inquiries seem to be made respecting the recovery of silver from old baths and waste solutions, it would seem that the methods generally prescribed, simple as they are to anyone in possession of a laboratory, yet present difficulties to amateurs out of the reach of furnaces, and that a simpler method of obtaining reduced silver in a compact, fused form (in which state alone can it be relied on for furnishing pure nitrate) is for such persons still a desideratum. The following method will, it is hoped, put the recovery of silver in a compact and pure state within the reach of all, even in the most ill-furnished position.

"Precipitate old nitrate baths with chloride of sodium in excess, and old hypo baths with sulphide of potassium, or, if this is not at hand, with the yellow solution obtained by

boiling lime and sulphur together for some time in water. The chloride and sulphide of silver thus obtained, after washing and drying, are then to be mixed with two or three times their weight of powdered nitrate of potassium. Select a solid piece of well dried wood of about eight inches cube to half a pound of the above mixture; place a small quantity, say half an ounce, on the upper surface, and thrust in the red-hot end of a burning stick. When deflagration has fairly commenced and a cup-shaped cavity has begun to form, add the remainder of the mixture in small quantities at a time (for fear of its overflowing) by means of a spatula or spoon. If this has been skilfully done, the whole quantity may be added without loss, and after the combustion is completed there will be a deep cavity in the block containing the reduced silver in a spongy form, in the midst of a cake of carbonate and sulphate of potassium and chloride of potassium. The whole is to be scooped out and thrown into water, which dissolves the salt, leaving the silver sponge, which, after drying, is ready for the second operation.

"Mix six parts of saltpetre, two parts of dry and fine sawdust, and one part of flower of sulphur. Take a large iron ladle, put a layer of flux about an inch deep on the bottom, and above this alternate layers of silver and flux, using about two parts of the latter to one of the former; press the whole tightly down. On setting this mixture alight it burns with great heat, and after combustion is over the silver will be found in a single compact button at the bottom of the ladle, and after well washing in water it will be ready for solution in nitric acid. By this method a lump of silver weighing many ounces can be obtained with great ease in a very short space of time."

#### Recent Patents.

WE propose placing before our readers the details of various photographic inventions which have been patented during the last twelve months, the specifications of which, owing to the pressure of current matter at the time, have not appeared in our columns at the time of their publication.

#### SILHOUETTE PORTRAITS.

BY F. R. WINDOW.

THE following method of obtaining silhouettes by photography only received provisional protection:—

"The manner in which I prefer to carry out my invention is as follows:—I light strongly a light coloured background, either from the back like a transparency, or from the front, and I place the subject to be silhouetted in front of this lighted background in a position where little or no light can fall upon it from the front. I then take by photography a picture of this lighted background and of the unlighted subject intervening. By this means I obtain a negative cliché of the subject in the form of a silhouette or outline, and I print from this on photographic paper in the usual manner; or it may be printed by means of photo-lithography on any suitable material."

#### STIPPLED BACKGROUNDS.

BY J. LONG, A. FORSYTH, AND J. R. GRIFFITHS.

THE following method of finishing photographs by printing from a second negative is one of the oldest dodges in photography, and it is not surprising that it was not carried beyond the provisional specification:—

"1st. We print in the ordinary way, by any of the known photographic printing processes on paper, a vignette head, or part, or whole figure.

"2nd. We prepare, on a plate of glass, paper, or any other transparent medium, a stippled surface or 'effect' in any coloured pigment suitable for that effect, and in printing we place it in the frame super-imposed on the print, and then by exposing to light we obtain on the print the design on the glass or other medium, shading those parts not required to have the stippled effect, until the ground is deep enough. We then tone, fix, and wash by any of the known methods of doing so. When the print is mounted, we rub the stippled parts with pumice or other abrading powder, and our effect is obtained."



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## THE PHOTOGRAPHIC SOCIETY OF LONDON.

THERE is once more a prospect, or at least a possibility, of harmony in the Photographic Society of London. We pointed out in our last that in the state of disunion, distrust, and antagonism which prevailed, no peace could be anticipated, no confidence could be restored, if a council were elected at a local meeting, under the domination of any clique or party, and that an appeal to the whole body of the members was the only course presenting any hope of an amicable solution of difficulties. Happily, that course was resolved upon at the meeting on Tuesday evening last, when, after an irregular and occasionally stormy discussion, some of the details of which it is desirable should be forgotten, Mr. Hooper's resolution was carried, and the election of a staff of officers by the voice of the whole of the members determined upon.

This desirable end having been gained, it is scarcely important to discuss the arguments *pro* and *con*, nor to notice the stormy episodes in the discussion which preceded the voting. It was certainly strange enough that the chief opposition urged against this course was to the effect that it was not in accordance with the old laws; and this opposition was urged by some of those who have so recently condemned these laws as clumsy, contradictory, and inefficient, and have so strongly urged the fact that the society was the maker and interpreter of its own laws. The arguments now are perfectly sound and good, but they are inapplicable. The society is practically in a state of collapse: it does not at this moment possess a quorum of officers by which any law can be administered. All the old officers except two have, we believe, definitely resigned, and so, we believe, have the whole of the new officers. If the maintenance of law were more important than it is, the society is not in a position, does not possess the means, of carrying out the law. At such a juncture the only course the society can take is to begin *de novo* to take the steps which it would do if it were a new society requiring officers. A section of the society, consisting of the resident London members, might, it is true, proceed to elect a complete new staff of officers; but by what notion of right, by what conception of propriety, they—at most two or three score of persons—could undertake such a course at such a time, without consulting the three hundred members residing in the country, we cannot conceive. Certain it is, that such a course would have led to the alienation of country members, and created an irreparable disunion between two sections of resident members.

In the collapse of all ordinary conditions, in the absence of any executive body having legal powers to administer

the law, in the actual vibration of constitutional change and of laws tottering to their fall, surely no course was so constitutional as an appeal to the whole of the members—to that body for whom and by whom all law is provided, and from whose consent all law must derive its force. A breach of law which involved no appeal to the fountain of law would have been unconstitutional, even if it had a good aim; but in an appeal to the members at large the whole principle of constitutionalism is involved: it is an appeal to that power behind the law which is greater than the law itself. It is, besides this, manifestly a conciliatory measure: it is a measure in which everyone practically says: "Whatever may have been my convictions and my feelings, I at once merge them in the general voice of the society, and I agree to abide by its decision." If concessions are involved in the result, no one can hesitate or feel humiliation in making concessions which the whole body politic has determined are right.

To give effect to a course as clearly without precedent as the circumstances are without parallel, a committee was formed at the suggestion of Mr. Walter Bird—that gentleman, we are happy to note, having been one of the active requisitionists, giving valuable aid now in securing this conciliatory measure. This committee proceeded to organise arrangements whereby the appeal to every member of the society might be promptly made, and his vote secured by post, still maintaining the principle of the ballot. Every member will receive a list of the members of the society, and will be at liberty to vote for one person as president, three persons as vice-presidents, and eighteen as members of council. To aid the judgment of those who may be anxious for such guidance, we believe thirty or forty names will be printed in italics, as being those of gentlemen specially suited for office. But every member will be at liberty to select and vote for any name he may choose, but he must not select more than the given number. We might possibly, without impropriety, have indicated the names of some who, in late emergencies, have striven hard to preserve the peace and secure the well-being of the society; but we will refrain from any suggestion which might influence voting. Those members who are interested in the welfare of the society have doubtless noted the names most worthy of trust, and we may add that, although the late council felt it necessary to retire from the position of distrust in which the antagonism of a party action had placed them, there are many illustrious and valuable names which, by a vote of the members at large, might without doubt be again secured to give efficiency and impart strength to its new legislative body. We would only, in conclusion, urge upon all members of the society to send in their lists of names without delay, so that not a vote may be lost.

## PHOTOGRAPHY AT THE INTERNATIONAL EXHIBITION.

THE display of photographs at the International Exhibition at South Kensington is a great improvement in every way upon those of several preceding years. The gallery in which the contributions are hung is convenient, accessible, and well lighted; and the pictures, consequently, receive full justice. The room apportioned this year to photographs is the first to the left on entering the vestibule of the Albert Hall from the Conservatory, and is technically described as the Crush Room of the Hall. The photographs are hung on the walls and upon a series of screens, the arrangement throughout being, so far as we can see, good and satisfactory. Several of the contributions have been exhibited before at the exhibition of the Photographic Society, but they possess sufficient interest and excellence to be well worthy of this larger and more prolonged publicity.

It is noteworthy that the exhibitors of portrait and figure subjects, and of reproductions, are relatively much



larger here than at the regular photographic exhibitions. The visitor cannot but be struck with the high quality of the portraiture generally; and the close juxtaposition of English and Continental examples permits a ready comparison as to the relative excellence of the two which is interesting, and will probably be found instructive. An impression prevails in the minds of a large section of the cultivated public to the effect that Continental photographers—or, at least, Continental photographs—are in advance of those of this country; and the common explanation in the popular mind is to the effect that “the light is better” on the Continent, the illustration being thus afforded, with amusing persistence, of the common notion that excellence in photography is more due to material conditions than to personal skill and culture in the photographer. In the gallery at South Kensington there is ample evidence, for those who compare intelligently, to prove that English photographs are fully abreast in excellence of the best Continental work. With equal merit in result, there is this essential distinction between the two: the Continental work is more elaborately and skilfully retouched; but the best English work, with equal or superior artistic qualities, is more natural and less sophisticated. Without entering into the proverbial odiousness of comparison, we may fairly point, in illustration of our position, to the magnificent work of Adele, of Vienna, and Bergamasco, of St. Petersburg, and compare them with the large work of Mr. Valentine Blanchard and the smaller work of Mr. Faulkner. The contributions of the Continental artists are exquisitely beautiful: generally very charming models, well posed, well lighted, and well manipulated; but subsequently worked upon, both in negative and print, with the minute care used in ivory miniatures, even where the pictures are of life size. Those of Mr. Blanchard, on the other hand, with a few skilful touches, to which they owe only freedom from technical defect, rather than elaborated finish, are excellent in virtue of admirable lighting, fine pose, and life-like character expression, the result of suitable lighting, pose, and a masterly general treatment. There is a degree of power and artistic quality which is, to a great extent, worked out of the Continental examples by over minute finish. The comparison of Faulkner's portraits of children is in no less a degree conclusive in favour of England. Nothing more perfect can be conceived, in every quality which constitutes good portrait art, than the gems which Mr. Faulkner exhibits, comprising some old ones and many new ones. Baby life, in its most beautiful and winning phases, has been seized and photographed with a technical and artistic excellence rarely accorded to adult sitters.

Another interesting phase of this exhibition is the presence of many singularly fine figure studies, the work of amateurs. Mr. Crawshaw's work is well known, and he sends here some of his finest and most charming. Mr. Cecil Wray, another amateur, contributes two or three rare gems in portrait and figure studies. The “Little Fruit-Seller” (4346) is the figure of a pretty little unkempt, untended looking child, tapping at a door in hopes to sell some fruit; the clever composition, the skilful use of a weak direct sunlight giving an effective cast shadow of the child, and the feeling and tenderness generally thrown into the picture, indicate art skill of no common order. A profile portrait study, and another a full length one, with the interior of a conservatory as background, are also very fine. Two pictures of childhood, by Miss E. Morris Mason, are also among the amateur triumphs in figure photography at the exhibition which are well worthy of attention.

Proceeding to notice contributions in *genre*, we find amongst the most striking contributions the noble composition of Messrs. Robinson and Cherrill, “Preparing Spring Flowers for Market,” which, being here well hung and fairly lighted, appears to still greater advantage than it did in the Photographic Exhibition.

We have already very fully expressed our high appreciation of this picture, and can simply add that fuller examination increases our admiration. The charming “Passing Stranger,” the “Gleaner,” and a life-size figure study, are sent by the same firm. With this class of work we do not find here, nor have we ever seen out of England, anything which compared with the pictorial photography produced in England. Mr. Bruce, of Dunse, sends several works of very great merit of the same pictorial class. His “Work,” “Glossy Leaves,” “Wanderers,” and “My Mother,” are here. All are admirably conceived, and capably rendered. “The Wanderers in a Foreign Land” is perfect. Mr. Earl has some capital examples in the same line; but his most novel work consists in some portraits of dead wild fowl of the most marvellous excellence. We have wild duck, mallard, curlew, and Guinea fowl, the size of life, or nearly, rendered with a degree of perfection that seems almost incredible. The perfect modelling and admirable general rendering are matters of course to a good photographer; but the minute renderings of texture, and the minutest nuances of tint and shading in the plumage, are rare and almost unexpected perfections. In our next we shall conclude by a notice of landscapes and portraiture generally.

## LANDSCAPE PHOTOGRAPHY: ITS PLEASURES AND PROFIT.

BY W. NEILSON.\*

I HAVE been requested to read a paper connected with landscape photography as suited to the present season, when we are about to make engagements for out-door meetings. The design is merely to make a few general remarks, with the idea of calling up some foretaste of the pleasure and advantage to be derived from such meetings, in the hope of inciting our amateurs especially to bring us proofs that they are successfully prosecuting that work which particularly belongs to them, and in which they have already shown so much excellence. I do so trusting that the members will supplement what I say with practical suggestions, knowing that many of them are better qualified for that than I am.

As introductory, I shall make some remarks on the position of photography. It sounds something like a truism to say, now-a-days, that photography is “a great fact;” but it may be doubted whether the import of the fact has been duly realized by the general community. The word “photography” is apt merely to suggest the results of certain processes which fill albums and portfolios with transcripts of every variety of face and place on which the sun deigns to shine. When we consider that almost every civilized being has at least one such album, or, at any rate, that there are as many albums as civilized beings in circulation, the idea is, indeed, stupendous; indicating, as it does, a universal process that may almost be said to have covered the world with pictures. But the word “photography” is suggestive of much more than the pleasure to be derived from albums and portfolios, which are in themselves vouchers of an immense producing agency. In short, photography, by creating a trade of anything but despicable proportions, has become a partner in the commercial world, adding something to those international bonds that draw mankind together.

A complete view of the subject would be interesting in many ways. But at present just consider, in passing, the thousands of operators it has called into being—I do not call them artists, for they are not necessarily so, although we have names among us that will stand second to none in any school of the day—the thousands of assistants, the thousands of printers, the thousands of spotters and retouchers, the thousands employed in producing paper, the thousands employed in providing chemicals, and the thousands who retail them; to which may be

\* Read before the Edinburgh Photographic Society.



added the benefits incidental to Her Majesty's Post Office, and a variety of water companies, and even (to descend to an albumenized point of view) the encouragement given to the breeding of hens—I say, when you consider the sum of all these varied and extensive results of the art we practise, the import of the word “photography” is vastly increased. Then, apart from its special art, and the trade it has originated, its services to science are becoming noticeable. We have already seen the astronomer call in its aid to help him in solving his difficulty of the solar eclipse, and again he is about to rely greatly on it in dealing with the transit of Venus. Important as these services are in themselves, they may be received as intimations of possibly greater services yet to be rendered in the unknown future. But whilst photography reaches sun, moon, and stars as a servitor of science, it is also a mighty servitor of our common humanity.

I presume we have all felt, in reading a memoir or perusing a volume of travels, that the interest is intensified by having a likeness of the individual, or exact illustrations of the scenes described. In fact, a memoir without a likeness, unless written by a very able hand, is apt to give merely some prominent incidents and sectional views which do not convey a completeness of character. But add a likeness, and it serves as an index to the man, and the vague and fragmentary shape, and we arrive at a truer interpretation of his character. This illustrating of books is a wide and useful field in which photography promises to play a conspicuous part, for I believe most people would prefer a photographic likeness in a memoir to any other—of course, I mean a good photograph, that has not been beautified, let us say, with retouching. And, in connection with this style of illustrating, the public are indebted to photography for the likenesses it has scattered over the land of the great and good men of the day. However we may admire the heroic characters and standard-bearers of the day, we feel as if we knew them better when we have their likenesses in our albums. Through his countenance we read the man, enter into his character, and are more drawn towards him with that touch that “makes the whole world kin.”

Is it too much to say that the national patriotism is enhanced by having the likeness of the royal family, who represent our national greatness, made so familiar to us? I think not. It is not always the most powerful influence of which we are most conscious; and our characters may be moulded by an unrecognized agency. Suppose a man has a picture gallery, filled with bestial countenances and loathsome expressions: will he by habitually looking at them feel himself elevated and refined? But it would be very different if the heads were expressive of all that is noble and good. Whilst consciously admiring them, he would, however unconsciously, become influenced by the qualities they expressed. The noble things, through his admiration, would leave a mark on him. This is a chief principle by which art becomes a benefactor of society. I have stated it thus to illustrate what I mean by saying that photography, by issuing broadcast likenesses of the good and great, confers a blessing on the country.

Then there is what may be called a moral aspect of photography, in so far as it helps to perpetuate the home influences, by presenting the home faces. When one's memory for words is defective he has recourse to a memorandum book. In like manner the album serves the defective memory for faces. If we could remember our friends' faces as distinctly as when they are present, there would be little recourse to the photographic memorandum book, except as to a curiosity. As it is, the carte album has its mission. Let us take one case, of thousands of such, as a sample. When a young man goes (say) to India, “out of sight” is apt very much to become “out of mind.” He finds himself in a new position among new acquaintances, which open up temptations to extravagance and dissipation, and for-

getfulness of the wholesome restraints of his old home. In such circumstances, what an advantage it would be for him to open his album every night and look over his mother's face and the rest of the family, and the scenes of his earlier days! His household goods would still be with him, restraining him with the old home influences. And, take note, there is one pretty carte which he looks and looks at, and actually kisses, at the risk of producing a yellow stain. Well, what a wretched being he would be without that piece of paste-board! In conclusion of this subject, just think of all these albums confer on millions of people! Not a carte among them but calls up a happy smile in some face, and a blessed throb in some heart.

These results of photography to which I have alluded are interesting from their variety, and imposing from their magnitude. But to the photographer they should be something more; for he can think of them as the great work in which he also is engaged. A man's character is partly moulded by the nature of his work; or at least, by the ideas he has regarding it, “like the dyer's hands, subdued to what it works in;” and if the photographer, instead of looking upon himself as a man whose function is to develop plates at so much a head, could habitually think of himself as a component part of the great whole that is producing such important results in the world, he would induce a habit of higher self-respect that might tend to make him both a better photographer and a better man.

We now come to consider the last branch of the subject—out-door work; of which I am here bound to say, “though last, not least,” although I am going to commend it on no higher a principle than that on which we turn horses out to grass. Nature, always provident for the needs of man, has provided two things in especial abundance, which is equivalent to an intimation that these are especially required—cold water and fresh air. It is to be hoped photographers have enough of one of these in the dark-room, though it is greatly to be feared that they have a plentiful lack of the other; consequently they must seek it elsewhere. There is another ample provision of nature from which mankind have taken a hint: the earth, which, in order to be properly productive, requires at times to be fallowed. Men whose brains are much employed, and some of whom that cannot be said, have wisely taken this as a precedent periodically to quit their habitual work and let themselves be fallowed. They accomplish this in varied ways: chiefly by fishing and shooting. Fishing is no doubt a delightful employment for those who like it; but even if one uses the fly, getting quit of the difficulty of putting the worm tenderly on the hook, “as if you loved it,” according to Old Isaac, he is very much tied down to one low-lying locality. Following the grouse on the hills is certainly an airy and healthy employment for those who require that sort of excitement. But there is something more excellent than rod or gun—the camera; with that on our shoulder we can face the smile of mother Nature, feeling that we have no mark of blood upon us.

(To be continued.)

## Correspondence.

### ANENT RECOMMENDATION WITHOUT TRIAL.

SIR,—Mr. Martin has again appeared, and honoured me with a rather lengthy epistle. I think, however, my former letter was sufficiently condemnatory of his proposed gas bags, and that your readers will thank me if I decline to go over the ground again. On two points, however, I must put Mr. Martin right. First, he seems to think that his first letter caused me to “feel sore.” I have rubbed far too long against angularities to feel sore at anything; and were I ever so thin-skinned, I am sure that there is nothing in his letter could give me a thought except the desire to prevent his setting any o-



your simpler readers wrong. And, secondly, my friend Mr. A' is not, as he seems to think, an amateur, but a practical as well as a thoroughly theoretical mechanic of over a quarter of a century's experience.

The real fault I find with Mr. Martin is, that he recommends the adoption of notions that he has not tried, and which, although their uselessness may be patent to many, are yet likely to mislead those who know no better. We have a good example of this in his article in the *News* of April 17th, page 190, where he gravely recommends his readers to insert a sheet of blue glass between two sheets of yellow in the window of the dark room. Mr. Martin must know that a yellow glass is yellow simply because it transmits the red and green rays, but intercepts the violet; and that a blue glass is blue because it transmits the violet, and refuses to pass the red and green. If he knows this, and will give the matter one minute's consideration, he will see that the effect of his recommendation will be to produce darkness just in proportion to the purity and density of his colours. The most satisfactory way to select a suitable colour for the window of the operating room is to examine the glass with a prism, discarding any sample that allows a trace of blue, and using only that which passes the red and green. This will generally be found to be a fine orange, which may be used with perfect confidence, anything else leading only to vexation of spirit.

On one other point, perhaps, I had better put Mr. Martin right. He says, in reference to the letter of "Oxygen," that a pint of water weighs only a pound, and that 112 pounds will be fourteen gallons. If, however, he will take his pencil, or do a little mental arithmetic, he will find a pint to weigh just one-fourth more, and the 112 pounds to measure just one-fifth less.

There! I've done with fault-finding, and beg to shake hands in spirit with Mr. Martin, who, I'm sure, is a first-rate fellow, equally anxious with myself to do all he can for the benefit of our much-loved art, and equally ready to give and take a little brushing when it is required.

Edinburgh, 2nd May.

JOHN NICOL, PH.D.

#### ELIMINATING HYPOSULPHITES, AND PRECIPITATING SILVER AND GOLD.

SIR,—I have noticed, on several occasions during the past few months, that there have been several extracts in the *News* from American journals, purporting to be new discoveries on the above subjects by American experimentalists, which are, in reality, due to Englishmen—e. g., the elimination of hyposulphites. Amongst these there is mentioned the hypochlorites. In this case it is well known to the older photographers, and those who are constantly using the preparation of hypochlorite of soda introduced by me for that purpose, that what credit or otherwise there may be attached thereto belongs to England.

More recently, these compounds have been re-discovered by them to precipitate the silver from hypo fixings. This was demonstrated by me, at the meetings of the societies in London, many years since, to show their action on the compound hyposulphites of soda and silver. Knowing this from the first, I recommended a solution of ammonia as an after bath, to render any possible trace of chloride of silver thus precipitated—in the prints under treatment—soluble, and so easily washed away.

Again, our cousin on the other side of the Atlantic, in a great fit of generosity, makes a present to the photographic brotherhood of the method of reducing the silver and gold from fixing solutions by a Smee's battery. It is well to remember that this English device is freely given, that photographers may be free from the penalty of precipitating by liver of sulphur, which appears to be protected by patent. I think that I may claim to be the first who brought this matter before the photographic public, and made a compact apparatus with filter combined.

As one who has never protected in any way the devices brought to the knowledge of photographers, I make this reclamation for English photography.—Yours, &c.,

8, Kingsland Green, May 18th.

F. W. HART.

[Photographers generally, especially all familiar with reports of South London meetings, where Mr. Hart has frequently demonstrated, will recognize the justice of these claims.—Ed.]

## Proceedings of Societies.

### PHOTOGRAPHIC SOCIETY OF LONDON.

THE usual monthly meeting of this society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, May 12th, Mr. J. SPILLER in the chair. Dr. MANN, acting as secretary, read the minutes of a preceding meeting, which were confirmed.

Mr. PRITCHARD read an interesting communication from Herr Obernetter on his method of reproducing negatives by means of the powder process, and exhibited a number of reproduced negatives which, as the chairman remarked, were indistinguishable from the originals.

Mr. WOODBURY also showed some remarkably perfect results in negatives reproduced by a similar method, substituting gum for dextrine, and glucose for cane sugar. He found that a negative reproduced thus in graphite was really more vigorous in printing than it seemed, and must be kept apparently thin, in order to print in like manner to the silver negative.

After a vote of thanks to Mr. Pritchard, Mr. Davis took the chair, and

Mr. SPILLER read a note on some experiments with coloured bromide films, undertaken to test Dr. Vogel's theory as to a film being made sensitive to non-actinic rays by saturating with a colour which absorbed those rays. His experience did not confirm that of Dr. Vogel.

Mr. STILLMAN had undertaken a series of experiments in the same direction, at the request of Mr. Lockyer. In all cases he found that the presence of colour retarded rather than accelerated. He had tried all kinds of dry plates, including some of Col. Wortley's, which were very sensitive; but he obtained no results with colours which exceeded those obtained with the bromide alone. The exposure was much increased by colour, sometimes no impression at all being obtained after an exposure of two hours. He had come to the conclusion that Dr. Vogel was mistaken in supposing that any increased sensitiveness was due to any physical cause. He believed that increase of sensitiveness must be looked for in chemical causes, such substances as the carbonate of silver and fluoride of silver presenting some promise. The latter presented a difficulty in its insolubility, so that he had not been able to get sufficient into a film to be of service.

Col. STUART WORTLEY had found a similar difficulty in regard to the fluoride of silver. In his experience with Dr. Vogel's method he had met with some success. He had found that by the use of other nitrates—notably the nitrate of nickel—considerable advantage was obtained. He had also been trying various experiments with the addition of organic substances to emulsions—salicine, for instance. Allusions had been made to Mr. Carey Lea's suggestion as to the use of this substance. He thought that gentleman could not have been reading the English journals for some time past, or he would not have proposed this as a novelty, as it had been applied so long ago, both by himself and Mr. Henry Cooper, in connection with the bromide emulsion process. It was curious that salicine in connection with sulphuric acid struck a deep crimson colour, which had a remarkable effect on the sensitiveness. The subject was a very fruitful one for experiment.

Mr. DAVIS believed that a large field was still open to investigation, as to the value of various silver salts, which had, of late years, been comparatively neglected.

Mr. G. HOOPER then read a paper on the collodio-chloride of silver process, and exhibited various examples, some of which had been in existence nine or ten years without change.

The CHAIRMAN (Mr. Spiller), in inviting discussion, said the question of permanency having been raised, he had examined some he received from Mr. Bruce two or three years ago, and found no sign of change.

Mr. SAWYER had but very slight experience with the process; but some transparencies he once produced by it had faded, possibly from want of care in producing them. He did not see any advantage over albumen. If permanency were desired, why not try the carbon, about which there could be no doubt?

Mr. PRITCHARD had produced some transparencies by the collodion process two years ago, and there was certainly no change in them: they were as perfect as when they were produced.

Mr. BLANCHARD was a short time ago looking over a drawer of old prints by Mr. Faulkner, who used the collodio-chloride process some years ago. He had found commercial difficulties in carrying it out, but, so far as permanency was concerned, both



Mr. Faulkner and himself could in every instance pick out the collodio-chloride prints by their freshness and purity, whilst all the albumenized prints had lost their first bloom.

The CHAIRMAN, after a few further words on the subject, announced that at the June meeting Mr. Keene would read a paper on the use of gelatine as a vehicle for silver salts; Mr. Kennett would read a paper on the gelatine emulsion process, with demonstration; and Col. Wortley would read a paper on development. The ordinary meeting would be now adjourned, as they would commence

#### THE SPECIAL MEETING.

The CHAIRMAN, in opening, referred to the proceedings of the last meeting, and his promise to call this special meeting. He had endeavoured to get a council meeting, but only six gentlemen attended, and he regretted to say that he had had definite resignations from many members of the council: Mr. Crawshaw, Professor Stokes, Sir Charles Wheatstone, Captain Abney, and Mr. Spence, had written and resigned; Mr. Glisher, Mr. Robinson, Mr. Bedford, Lord Lindsay, Mr. White had also gone. There only remained of the old council: Mr. Mayland, Mr. Wharton Simpson, Mr. Dallmeyer, and Mr. England.

These gentlemen all reminded the chairman that they had definitely resigned.

The CHAIRMAN resumed, that in that case there were but Mr. Blanchard and Mr. Davis.

Mr. DAVIS explained that as treasurer it would be inconvenient for him to resign until another treasurer were properly appointed; but he had no intention of retaining office unless elected by the voice of the society at large.

The CHAIRMAN said he had on his own responsibility asked Mr. Fox Talbot to act as president, but that gentleman had declined.

Mr. HUGHES then proposed the first portion of the resolution announced in our last, modifying the 7th rule, which was passed in February. The modification was to give power to a special meeting to fill vacancies in the council.

Mr. STILLMAN seconded the resolution.

Col. WORTLEY proposed, as amendment, that the special meeting for such purpose should be held within a month of the occurrence of vacancies, or, in the case of vacation, immediately on the resumption of meetings.

After some conversation on points of detail as to the number of vacancies which would justify a special meeting, in which Mr. Davis, Dr. Mann, Mr. Howard, Mr. Hughes, Mr. Stillman, and Mr. Sawyer took part,

Major MALCOLM said they had heard from the chairman of the loss of various great and valued names—names which certainly, so far as he was concerned, had formed one motive for his joining the society. This loss was the result of certain resolutions they passed in February by a majority of three—resolutions which it was clear the society at large did not endorse. He had proposed that these resolutions should not be confirmed, but his suggestion was not heeded. Now he found them engaged in altering these very resolutions; and he could not but think their best plan would be to rescind them altogether. The chief danger which, it seemed to him, the society had to guard against, was small majorities carrying vital changes by surprise.

Mr. BLANCHARD thought that the old law, which left the filling-up of vacancies in the hands of the council, was much better. He had not wished to act precipitately, but he now tendered his resignation.

After some further irregular conversation,

Mr. HOOPER said nothing could more forcibly illustrate the folly of unconsidered and piecemeal legislation than the fact that, within a couple of months of passing resolutions which had destroyed the peace of the society, they found it necessary to alter these very laws. He had given due notice of an amendment, which he would move when the second part of the motion came on.

After some further conversation, the first part of the alteration of Rule VII. was passed, incorporating Col. Wortley's amendment.

Mr. GOSLETT begged to tender his resignation as a member of council.

Mr. SPILLER felt in the same position; he only held office until a new council could be constituted.

Mr. HOWARD tendered his resignation.

The CHAIRMAN said he had received a notice of motion from Mr. Hooper, but not in time to send out to members.

The second part of the motion for altering Rule VII. and filling up vacancies having been moved and seconded,

Mr. HOOPER moved his amendment, which was printed in our last, the effect being, that in the present crisis of the society, no

legally constituted executive existing, an appeal to the whole of the members to appoint a new council was the only mode of restoring the society to harmonious working.

Col. WORTLEY said that the resolution was in opposition to the laws, and the chairman should rule it out of order. Further, he objected because he had received no notice.

Mr. STILLMAN said the motion was in opposition to the resolution just passed, and a deliberative assembly did not pass resolutions in one half of a meeting which opposed resolutions passed in the other half.

A confused and angry interjectional discussion followed, in which it was asserted that Mr. Hooper's project would be impossible as well as illegal.

Mr. HART sympathised with the intention of the resolution, but thought that an alteration of the law should be first secured.

Major MALCOLM seconded Mr. Hooper's resolution. He saw no difficulty in working it. It was, in fact, the plan adopted in another society with which he was connected, and there it worked easily and well. Possibly, in sending round a complete list of names to country members, it might be well to indicate in some way a list of thirty or forty of the most eligible men. He felt this consideration of thus consulting them in forming a council was due to country members. He was one; he was not in the trade; he had only very recently joined the society, compounding or his life membership by a payment of eleven guineas; he felt entitled to speak on behalf of country members. He would only make one more suggestion: he hoped that some guarantee could be given, if they once more got a good council, that it should be fairly treated in future.

Mr. HUGHES said that such an appeal to country members was not in accordance with law. They had no power to do it. They must first alter the laws, and give due notice to all the members. The members generally had no notice of this change. The requisitionists were pretty sharply reminded of the necessity of detailed notice before, and he saw no reason for not applying the same law now.

Mr. MAYLAND was delighted to see so much respect for the law so suddenly displayed, but thought it was sadly out of place as applied now. He most strongly supported Mr. Hooper's motion as being at this juncture the only mode whereby peace, unanimity, and confidence could be restored to the society.

Mr. HOOPER admitted that there was no provision by law for his motion; but he held that as they had now no executive, and must begin *de novo* with something, this was the proper way to begin.

The CHAIRMAN attached much importance to Mr. Hooper's resolution. Admit that it was not in accordance with any law: if the whole society agreed to ignore the law, there could be no one to call them to account.

Major MALCOLM pointed out that the objection of Mr. Hughes, that no notice had been given, fell to the ground. Mr. Hooper had given notice, but there was no efficient executive to give it to members.

After further desultory discussion, in which Mr. Hooper, Major Malcolm, Mr. Hughes, Mr. Davis, and others took part,

Mr. STILLMAN proposed that ballot papers be sent to all the members.

Mr. HOOPER said that was just the principle of his resolution, which Mr. Stillman had denounced as illegal.

Mr. HUGHES asked if the meeting intended to carry out the laws?

Mr. EDWARDS asked if voting by balloting papers were not a part of the new laws passed in February?

Dr. MANN said no; that was proposed in the draft laws.

Mr. WALTER BIRD said that the proposal, although not in accordance with the provisions of law, might, under existing circumstances, be the wisest course to restore confidence. If he thought that the gentlemen of the old council, whom they esteemed highly, would stand for election by the votes of the whole society, he would support Mr. Hooper's amendment.

The CHAIRMAN then asked the members of the old council present whether they would stand in the event of their election under Mr. Hooper's plan? He asked seriatim the question of the following gentlemen: Mr. Wharton Simpson, Mr. Mayland, Mr. Davis, Mr. Blanchard, Mr. Dallmeyer, Mr. England, and Mr. Pritchard. Each gentleman said that in the event of his election by the voice of the members generally, he would accept the duty with pleasure.

The CHAIRMAN then put Mr. Hooper's amendment, which was carried by a large majority, seventeen voting in favour of it, and eight against it.



Mr. Bird then proposed that a committee be appointed to give effect to Mr. Hooper's proposition; and a committee consisting of the following gentlemen was appointed: Messrs. Hooper, Bird, Blanchard, Hart, Sebastian Davis, and Major Malcolm.

The meeting was then adjourned until Tuesday next, and after a vote of thanks to the chairman, the proceedings terminated.

#### EDINBURGH PHOTOGRAPHIC SOCIETY.

The usual monthly meeting of this society was held in the Hall, 5, St. Andrew Square, the president, Mr. R. G. MUNN, being in the chair.

The minutes of previous meetings were read and approved, and the following gentlemen were admitted ordinary members: Dr. David Murray, Messrs. Robert Smart and William Cunning.

Mr. WILLIAM NEILSON then read a paper entitled, "Landscape Photography: its Pleasures and Profit" (see page 235). At the conclusion of the paper Mr. Neilson said that he had amused himself by making some approximate calculations of the quantities of some of the material consumed by photographers. As, however, his paper had taken up so much time, he would not trouble the members at present with the results. He would just mention one item which he thought was very suggestive, and it was this: that in addition to what they might consume at the breakfast-table, photographers throughout the country use about one million of eggs per annum in the various processes into which albumen enters. He also said that before sitting down he might call the attention of the meeting to two of the very beautiful autotype enlargements which were hung on the wall, as they formed capital illustrations of his remarks on the importance of suitable foregrounds. The one was a very fine photograph of the Trossachs, with Ben Venno in the distance; or, rather, it ought to be in the distance, but in consequence of the want of a suitable foreground, the smaller hill with the trees seemed to be really a part of the larger mountain, the composition being altogether faulty, and the effect unnatural. The other, a view of Loch Katrine, although not better as a photograph, was really a grand picture, and gave a true conception of the view. If, however, the members would cut off the foreground, the charm, and grandeur, and natural effect would be lost, as the idea of distance was altogether absent.

Mr. Ross said that he was probably one of the very earliest landscape photographers, and he could assure all present that there was a charm in the practice which only landscape photographers knew. He could endorse every word Mr. Neilson had said of its pleasures. It had, no doubt, its drawbacks, as everything else had; but none that with care, judgment, and patience might not be overcome. The painter could select the point of view that pleased him best, and if the foreground was not to his liking he could select one more suitable and put it in; but no such good fortune fell to the photographer: he has to move from point to point till he gets what is required, and if his soul was in his work he did not grudge to travel many a long mile to secure his object. His own habit had been to devote the misty days to such prospecting, and even that was glorious work, as the fine old hills of our native land never looked so grand as when seen glimpse after glimpse through masses of rolling mist. Those who determined to make good landscapes must not expect to be able at all times to do so, but must patiently wait for suitable atmospheric conditions. The work of several of our popular landscapists is very justly admired, but few of us know how long they have sometimes to wait before they get what they want. Probably one of the most popular pictures in the market is that of one of our Highland bridges, and if patience in its production be an element of popularity, it well deserves it, as the photographer actually waited in the vicinity for six weeks before he was satisfied with the conditions under which the negative was taken. He was glad to say that landscape negatives had not as yet been to any extent subjected to the abomination of retouching, and he hoped they never would. The truth, and nothing but the truth, should be the motto of every landscape worker, and he should look upon every proposal to bring the landscape under the retoucher's hand as a charge against the Divine Architect of having done His work imperfectly.

Mr. PANTON then stated that the president and he had the previous week made a short tour with their cameras, and gone as far north as the Clachan of Aberfoyle. The result of the

trip had been some fairly good negatives, prints of which he laid on the table for inspection.

After the prints had been examined,

Dr. DICKSON said he thought Mr. Panton had hardly done justice to himself and the president in speaking of the negatives as "fairly good." They were, he thought, specimens of very high class landscape work, and showed not only that the dry plates used were faultless, but also that he (Mr. Panton) knew how to use them to produce the very best effects; and he (Dr. Dickson) would like to know what process Mr. Panton had been working.

Mr. PANTON replied that it was one that the dry workers of this society generally liked very much; it had been introduced by the vice-president some years since, and was well known as Davies's "beer and albumen."

The adjourned discussion on preserved sensitized paper was then resumed.

Mr. TURNBULL stated that since he had introduced the subject he had continued his experiments, and found that the strength of the citric acid solution then recommended was not sufficient to keep the paper for any great length of time, but that if it was increased to fifteen or twenty grains per ounce he thought it would keep indefinitely.

A letter was then read from Mr. PEAT, of London, in which he said that he had got some of Durand's paper in 1872; that it had been forgotten till December, 1873, when it was found quite brown. He had, however, printed some pieces of it then, and three months after they were put into the toning bath, when, to his surprise, the discolouration altogether disappeared, and they turned out good prints, with "fine creamy skies and white high lights." Some of the prints were exhibited, and seemed fairly good, and not unlike results from recently sensitized paper.

Dr. JOHN NICOL said that he had intended to make an examination of some of the samples of sensitized paper, but had only got a commencement made of his experiments that afternoon. The samples showed that they all contained an excess of acid, and he hoped by next meeting to be able to report both as to the kind and quantity of acid in each sheet, and also whether the acid had been mixed with the silver in the bath, or in a separate solution, as used by Mr. Turnbull.

Mr. MILLIKIN showed some prints on Carrier's paper mounted on a card along with one on paper recently sensitized. The paper had been kept for four years, and was perfectly white. It printed rapidly, but the finished print showed a want of brilliancy when compared with that on paper recently sensitized. He said, however, that he did not know whether the dullish effect was peculiar to the paper originally, or had come about by change consequent on age.

The attention of the members was then directed to a collection of large photographs of the Yosemite Valley, kindly lent by Mr. J. R. Carphin, and which were hung on the walls; and also some fine enlargements by the Autotype Company, from negatives by Wilson and Burns. The collection was very much admired, and the photographer, whoever he may have been, complimented on the energy and determination to overcome difficulties shown in the production of such large pictures of such almost inaccessible portions of the country.

Votes of thanks were then awarded to Messrs. Neilson, Carphin, and the Chairman, and the meeting adjourned.

#### Talk in the Studio.

BERLIN CARDS.—We have received from Mr. R. F. Barnes, of New Cross, a few examples of a novelty in the treatment and "getting up" of card portraits in which the work is exceedingly fine, and the style very effective. All the portraits are simply head and bust, posed and arranged with much skill, and lighted in what is termed the Rembrandt style, but without the exaggerated and violent effects of light and shade often seen in this style. Judicious touching on the negative with lead pencil only serves to secure delicacy without losing natural texture. The special novelty is in the mount, which consists of a chocolate coloured enamelled card, so like the tone of the print that they are scarcely distinguishable, and the result is an effect of quiet richness singularly pleasing.

A PROVINCIAL STUDIO.—We find in a provincial journal a notice of a new studio built at Redcar, a charming sea bathing



place on the Yorkshire coast, which gives pleasant evidence of successful enterprise. The journal in question speaks of the "exertions made by Mr. Hoggard to render his studio second to none in Europe in internal arrangement and completeness. After passing through the avenue of paintings, the visitor finds himself in the reception room, from whence by a small staircase he ascends to the large hall. This grand *salon*, which is fifty-one feet long and eighteen feet broad, is a marvel of elegance, and seems wonderfully adapted to its purpose. Being lighted only from the north side, the "sitter" receives the light in a natural way, and does not show upon his face the war of conflicting shadows which destroy the expression. Around the room are screens and curtains to modify the intensity of the light, and here and there veritable articles of furniture destined to figure in the photographs—such as easy chairs, Davenport, writing desks, and music stands. Here, also, we find cameras of immense capacity, and lenses procured at an enormous cost from the best makers. At one end of this room is the artist's finishing *atelier*, and at the other the developing chamber—both fitted up with all the newest appliances which science can suggest. By another staircase we are conducted below to a nest of rooms, called, respectively, the printing room and the toning room, &c., &c. In the last named chamber, and placed in an immense cistern of water, is a miniature water wheel, whose special duty it is to keep the water of the cistern in motion, so as to render all the photographs placed in it permanent. This arrangement is certainly ingenious, and is, we are informed, truly efficacious. At length we reach the equestrian studio, built for the purpose of taking instantaneous photographs of horses, &c. The whole premises are warmed by hot water."

**TEAR-SPOTS ON SILVERED ALBUMEN PAPER.**—Mr. L. D. Judkins, writing to our Philadelphia contemporary, says:—"The first symptoms of tear-spots on the drying of silvered albumen paper is the oily appearance on the silvered surface while drying, the free surplus silver running down the sheet in small rivulets, then breaking up into small globe-like bodies; and, if left to dry, form what is often called tear-spots, a source of great annoyance to many photographers. If at any time the paper dries as above stated, pin the paper to a board at each corner with copper tacks, and while moist take a tuft of cotton and destroy the small bodies of silver as they form on the surface of the paper by brushing them away. But if the paper has become nearly surface dry, wet the tuft of cotton with the drip on the bottom of the sheet, and moisten the surface of the affected part again; the paper now assumes a smooth surface, and dries free from spots."

**CLEANING PLATES.**—Another correspondent of the same journal says:—"Strong cyanide is the best thing I know of to clean glass plates. Rub both sides with a sponge tied on a stick, then rinse in water, when the glass will be ready for albumenizing if you use that for a substratum. I do not use a substratum, but rub the plates as I take them from the water with whiting, letting it dry on. Plates so prepared will keep any length of time. When wanted for use, rub off the whiting with a dry chamois leather, and you will have a clean plate, and one on which the collodion will stick."

**HOW TO CUT PAPER.**—Here is our method of cutting paper. We have two pieces of zinc, the first of which is  $3\frac{1}{2}$  inches, and the second 2 inches wide; take a quarter sheet of paper, lay it on the table, place the larger pattern on one edge and cut off a strip the width of the pattern; lay it on as before, and it will just half cover the remainder. Cut along the edge as before, and the quarter sheet is in three strips  $3\frac{1}{4}$  inches wide; then take the smaller pattern and cut across the strips in the same way, and you have pieces of paper just right for cartes-de-visite. We use a rolling glass cutter which does not go close to the pattern, so the latter are a little smaller than the paper is to be cut. If a cutter is used that will cut the paper as small as the patterns, the latter should be  $3\frac{3}{4}$  and  $2\frac{1}{2}$  inches respectively. The above method gives forty-eight cartes out of a sheet, and is much more convenient than to fold the paper and then cut; it leaves the edges smooth and straight, and does not, besides, break the paper.—*Philadelphia Photographer*.

**HYPOSULPHITE OF SILVER.**—Protoxide of silver has so great an affinity for hyposulphurous acid that it abstracts it from potassa and soda. If oxide of silver be digested with a solution of hyposulphite of soda, a considerable proportion of oxide of silver dissolves, and the liquid, when evaporated, yields crystals of the double hyposulphite of soda and silver. The chloride, bromide, and iodide of silver also dissolve readily in a solution of hyposulphite of soda, and after evaporation the

liquid affords the same crystals of double hyposulphite. The solubility of the chloride, bromide, and iodide of silver is applied in photography to the fixing of the image—that is, to the removal of the compounds of silver from the parts which have not been acted on by light. Solutions of the double hyposulphites, when boiled, give off sulphide of silver, and sulphate of soda is formed. The hyposulphites of silver can be obtained isolated, in the form of a white powder, by pouring a solution of hyposulphite of soda into a solution of nitrate of silver; but the precipitate soon blackens in the light, sulphide of silver being formed.—*Regnault's Chemistry*.

## To Correspondents.

**PAPYRI'S.**—The defects in the pieces of sensitized paper forwarded arise from two different causes. In one the defect is in albumenizing the paper. An air-bubble has formed on the surface on the first contact of the paper with the albumen solution, and so formed the iridescent marking at its edges. The red mottled markings are due, probably, to the use of a small quantity of a somewhat weak solution in sensitizing.

**C. W.**—You will find it wise to learn the metrical system of weights and measures. The formula is, in round numbers, as follows:—

Distilled water...	...	...	22 drachms
Nitrate of silver	...	...	3 "
Alcohol	...	...	$5\frac{1}{2}$ "

**W. E.**—See answer to "C. W." above.

**RED HEAD.**—The defects in your prints are due to a variety of causes. In the first place, the negatives are not good; some are thin and foggy, others are hard, and almost all are lacking in definition, either from bad focussing or the sitter moving, and there is slovenly, careless manipulation in all. No. 1 is apparently from a slightly foggy negative, and is not printed sufficiently deeply, hence the weak grey tone. No. 2 is a hard negative; the tone is not bad, but the print is smeared with some mess over the surface. No. 3: the print is not bad, but is a little over-toned, and is also smeared with something. No. 4, the same as last. No. 5 is dirty and out of focus. No. 6, the same. You apparently use some very hard water for rinsing the prints before toning, by which a grey deposit of carbonate or chloride of silver is formed on the print, which interferes with toning. When such a deposit forms, take a clean sponge and pass it over the surface of the print. Your letter was too late for answer in our last.

**G. E. D.**—Old collodion is often very efficient in cleaning plates, but it is very unpleasant and painful to the eyes. Putty powder will remove the stains of which you complain.

**M. G.**—You may varnish your prints if you wish, but the result is not pleasing, and bears no comparison with the effect of enamelling with gelatine and collodion.

**B. F. N.**—The defect of which you complain is in reality a good quality. The sky in the negative should not be so dense as to print white, or the negative will be hard. The slight tint in the print sent will not interfere with the effect of clouds lightly printed in. With suitable cloud negatives it is not important to block out trees and tops of buildings.

**J. L.**—Carbonate of lime (that is, pure chalk) is the best thing you can use for readily neutralizing a solution of chloride of gold without rendering it alkaline. A good toning bath can be made in a quarter of an hour by mixing a little precipitated chalk—to be had of any chemist—with chloride of gold, and then adding warm water. It will be ready for use as soon as it is cold.

**TYRO.**—Carpet is not a good thing for the floor of a studio, as it harbours dust. Kamptulicon, or oil-cloth, or linoleum answers very well. Some effective, quiet patterns are to be had in the latter material. Dust in either studio or dark-room is a sad foe to photographic cleanliness.

**N.**—The marks on your negative are due to the gelatine used in your developer. It sometimes happens that thin floating filaments of undissolved gelatine adhere to the collodion film, and prevent the varnish permeating the finished negative. The gelatine is not noticed on the film until its effect is seen after varnishing. On the whole, it is as well to avoid gelatine in the developer.

**PURZLED.**—A porcelain lined saucepan is not suitable for boiling down a bath. There are frequently minute cracks in the glaze, and hence your solution would come into contact with the iron pan, and cause the blackness you describe. An evaporating dish of Berlin ware is best for the purpose; but you may boil a bath in a Florence flask over a gas burner, if you keep it full and use care.

**G. M. S.**—The loss of glaze in your enamelled prints is due to the softening of the gelatine by the moisture of the gum you used in mounting. To retain the glaze perfectly, the mounting should take place before removing the print from the glass. This plan involves more trouble, however. If you use tolerably stiff paste, or an alcoholic solution of glue, you may avoid much loss of gloss. Several Correspondents in our next.



## The Photographic News, May 22, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

PHOTOGRAPHIC ENTERPRISE.—ORNAMENTATION BY PHOTOGRAPHY.—A THIN WATERPROOF PAPER.—DRY PLATE DEVELOPMENT.

*Photographic Enterprise.*—A singular instance of photographic enterprise came under our notice a short time since, which amply proves that there are photographers not only fully cognizant of the capabilities of their art, but know, too, how to make the most of them. An announcement put into the first column of the *Times* one morning had the effect of bringing by post the same evening a photographic impression of the whole of the similar notices published on that day. The reproduction was neatly mounted on a card, and sent with a polite request that either it might be returned, or a dozen stamps forwarded in lieu thereof. The negative must, therefore, have been taken, and the impression printed, toned, fixed, washed, and mounted, by the afternoon, in order to be in time for the evening post: and all this work, too, would be done on speculation, in the hope that those interested in the notices of births, deaths, or marriages appearing in that particular edition might be induced to purchase photographic copies of the same. On considering the matter over, one would scarcely imagine the affair would be a paying one, but it is found in practice that the little cards are seldom returned, and that not unfrequently a further demand for copies is made to forward to other relatives. One can hardly assign any reason why people should pay a shilling for a copy of anything that might be purchased for a fourth of the sum, but such is the case, and the recipients are so taken with the novelty of the idea, and neatness and rapidity with which it is carried out, that they send off the stamps long before they have made up their minds what to do with the little card of announcements. There can be no doubt that the little enterprise pays its way, and we congratulate the clever originator of it.

*Ornamentation by Photographs.*—We are glad to see that photographic ornamentation is becoming quite usual upon *menu* cards at the dinner table, upon ball programmes, and other similar trifles. Some time ago we advocated this pretty application of photography, which, if well cultivated, should bring the photographer lots of work to do. Portraits, old tableaux, or tiny little landscapes, form very suitable pictures for the purpose; and when mounted in a proper manner upon a card nicely designed and finished, the result forms a welcome souvenir to keep in remembrance of the auspicious occasion. If it is a dinner given to some great personage, on the occasion of his farewell, or arrival, or what not, there could of course be no more suitable or desirable ornament to the card than an oval medallion portrait of the guest whom all are so desirous of honouring, and in this case the *menu*, upon which much care and taste have usually been bestowed, would have a much better chance of being preserved and taken care of afterwards. At a lawn party or fête champêtre some rustic, little scene or fine view, or castle in the neighbourhood, would be a fitting subject; while, again, for balls and routs, some merry-making scene would be in keeping with the occasion. At the banquet given to the Czar the other day at the Crystal Palace, there were photographic portraits of the Imperial guest, as also of the Duke and Duchess of Edinburgh, upon the dinner cards, which were most elaborately executed. Such little portraits as these need cost but very little to produce, supposing one had a moveable back or cameo arrangement to one's camera. In the latter case it is possible to produce six three-quarter inch or inch ovals upon a five by four plate—or, in other words, print seventeen heads—at the cost of a dozen carte-de-visite pictures, the little portrait being stamped out afterwards by means of a punch of the requi-

site size, so that the actual cost price would not far exceed half-a-crown or three shillings per hundred. Of course there are the mounting and other matters to be considered, but at any rate the cost of production of such cards would not be greatly increased by the addition of photographs of the kind we mention.

*A Thin Waterproof Paper.*—A thin waterproof tissue for photographic purposes is a desideratum sometimes felt in ordinary manipulations. M. Leon Vidal has for a long time past been seeking a transparent material of the kind for mounting or superposing his heliochromic impressions, for sheets of mica, which were used for the purpose, are rather expensive. At present he employs, we believe, a thin vegetable fabric, made as translucent as possible, and upon this he fits together his transparent, tinted images. As some of our readers may at one time or other stand in need of a cheap waterproof tissue of this kind, they may like to know that tough tissue paper floated for a short time upon the surface of an aqueous solution of shellac in borax, and then dried in the air, will afford them what they desire. And if a coloured waterproof paper is required, then all that is necessary is the addition of a small quantity of aniline colour to the borax.

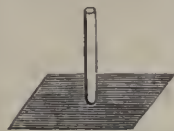
*Dry Plate Development.*—There is—so an amateur photographer tells us—one thing sadly wanted in dry plate photography to render one perfectly confident of one's results: it is a developing dish of some kind that could be employed at the time of taking the negatives, and which, without being cumbersome, could be used without risk of spoiling one's plates. The old difficulty a tourist experiences, of not knowing what is in his plate box until he arrives home some weeks afterwards and begins to develop, is one that is always urged against the use of dry plates; and if only a practical developing bath—say of orange glass—to slide on and off, could be contrived that would fit closely to the dark slide, out of which the plate might be lowered, much would be done to ease the mind of dry plate workers, and amateurs especially. Concentrated developers might be carried, to be mixed with water wherever a good supply could be procured; and when the development has gone far enough, then the orange glass might be removed, and the further working up of the negative more carefully followed. We give the suggestion for what it is worth.

### AMERICAN CORRESPONDENCE.

#### "LITTLE DODGES"—OUR NATIONAL EXHIBITION.

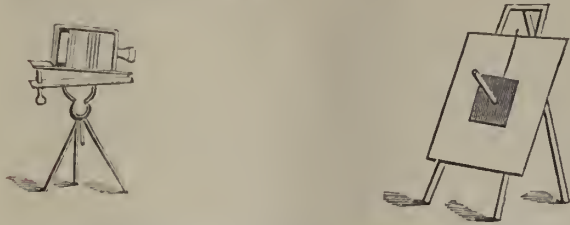
*Little Dodges.*—I never went into a photographic establishment yet, I believe, unless I saw or learned of something that was new to me; and I am more likely to see new things in a place of the least pretensions, than in one of a more "swell" nature, as you Islanders would say. Some people, too, who practise photography not only because they love it, but because they require bread and butter too, are full of what may be termed "little dodges" or hints and ideas which come useful in the practice of our art. One of this sort is Mr. Robert Benecke, of St. Louis, than whom a better posted photographer does not live. In a letter from him a few days ago, I received a number of useful hints from him. Among other things he "lets out" the following:—

"Another little dodge I have introduced into my practice. The object is to see at one glance whether a plan, map, &c., to be copied, stands parallel with the instrument. It is nothing but a straight board about six or eight inches square, in the centre of which a round stick is fastened perpendicularly. Thus: let the board be of a dark colour, and the stick white. Now hold it or hang it by a string in front of the drawing; let the stick be there where the two diagonals would cross each other. Next point your camera at it. Now if you see in the centre of your ground glass a white circular spot on dark ground, your drawing-board and camera stand correct; if not—that is, if you see the picture of this contrivance too high or too





low—lower or raise your instrument, and shift it until you see no more of the stick but a white spot on black ground. The following sketch will explain it at once.



"Here is another item. It is very desirable often to ascertain the exact amount of nitrate of silver contained in a solution that holds other salts—nitrate of ammonia, for instance—and where, consequently, an actiue-hydrometer cannot be used. The plan I have adopted is this: take (say) one-half ounce of the solution to be tested, add muriatic acid until all chloride of silver is precipitated (an excess won't hurt\*); take two pieces of filtering paper, both of the same size and kind, put them in a funnel, and pour the chloride, &c., on it; pour also three or four times water on it, to wash out the nitrates. Now, after it has ceased dripping, spread the filters on an old Daguerreotype plate, ferrotype plate, or piece of glass; put it in a hot place, and soon you will have the dry chloride of silver on your filter. Next pull your two filters apart; put the one that has the chloride on one side of the scales, and the other empty filter on the other. Now weigh the chloride. By aid of the following table you can calculate at once how many grains of nitrate of silver there were in the solution.

1	grain chloride of silver	=	1.18	nitrate of silver.
2	"	"	=	2.37 "
3	"	"	=	3.55 "
4	"	"	=	4.74 "
5	"	"	=	5.92 "
6	"	"	=	7.11 "
7	"	"	=	8.29 "
8	"	"	=	9.48 "
9	"	"	=	10.66 "
10	"	"	=	11.85 "

To illustrate this mode by an example, we will suppose we found the chloride contained in one half ounce of the solution to weigh eighteen grains, or double that amount, thirty six grains, in one ounce.

30	grs. chloride of silver	=	35.55	nitrate of silver
6	"	"	=	7.11 "

42.66 the amount of

nitrate of silver in one ounce of the tested solution.

"Doctors seem to agree now that, in order to get the greatest brilliancy and permanency in silver prints, a short but thorough washing is the plan to be followed. I have some prints now made in 1858, which show no signs of fading yet, and were washed with very little water. They were washed by causing the water to fall on them from a height of ten to twelve feet. I placed them on a board, and by means of a long pole nailed to it, which I lowered from my window, I caught the stream of water on them. The paper would become quite translucent, as if it had been oiled, but would be all right again on drying. With one bucket of water I used to wash three whole size prints. This was rather a tedious way, but some plan could easily be devised by which the same process could be applied on a large scale.

Our National Exhibition is to be held in Chicago in July. The rules and regulations are the same as heretofore, and as a handsome gold medal is offered for the best collection of photographs from England, I trust it will be incentive enough to bring a generous competition from your readers. Another medal is offered for the best collection from France, and still another for the best collection from Germany.—Truly yours,

Philadelphia, May 4th, 1874. EDWARD L. WILSON.

## LANDSCAPE PHOTOGRAPHY: ITS PLEASURES AND PROFIT.

BY W. NEILSON.\*

LET us now—to use a figure strong enough for Iludibras himself—try to have a sniff of the hill air through the nostrils of imagination. We have left the town behind us, with its oppression of smoke, stone, and lime, and exult in the fond belief that nature is waiting expressly for us to take her likeness. We have reached the rural inn, where we intend to lodge for some days. Delightful! A sanded floor, pictures of the four seasons that remind one of the primitive times of Noah and his wife, and everything so nice and clean; all intimating that "life should be spent in calm content." Thankful to be beyond the reach of gas, we march to bed with honest candles in our hands, led by an old lady who looks like the remnant of an innocent world—the healthy Hebe being left behind to clean our boots. Now we are seated at our first breakfast, with appetites that seem to increase as the viands vanish—six souls in all, as merry as ever was old King Cole. I propose that we should devote the day to "prospecting," but am immediately put down with a hubbub of exclamations—"We may not have such another glorious day"—"We must have a trial of our plates to see how they work," &c., &c.; and when a bold man, who is going in for the "wet," declares that his tent is dying to stretch its legs, it is evident that we are all eager to perform a like operation on ourselves. Having agreed to re-assemble at seven o'clock for that rural symposium, a tea-dinner, four of our number disappear in hot haste, loaded with their traps, whilst a friend joins me in a prospecting tour.

How delicious the air is as we tramp upon the crisp heather! Every step seems to give us new life and strength; and we think of our former city selves with a sort of pitying contempt. We have reached the summit of a rocky knoll, and a dream of beauty lies before us. The silence in which it has spell-bound us is broken by my friend croaking out, "It's not photographic." Quoth I, "That's true, but I am determined to have it. Let us skirt round the valley till the view composes itself photographically. I expect from yon rock peering from the birches we shall find the fitting point of view. But, friend, there are some legs much given to make a toil of a pleasure; pray remember that, like the illustrious Hamlet, I am somewhat 'fat and seant of breath.'" And so, with light hearts and hats, we saunter on, happy as the skylark that hangs above us, turning sunshine into music. Philosophers might moralise, as the bee hums, the bird chirps, and the rabbit starts away with pointed ears and white feet, how things so insignificant in themselves can add a charm to the sunny picture; but we are content to enjoy life, pausing occasionally in our climbing to admire the view—that is, to take breath, and tell each other it is very warm.

At last we mount the desired point. "That will about do," says my friend; to whom I reply, "Not quite; it wants a foreground; let us try that peak behind the pines." As we mount the peak I exclaim, "Now we have it; a few yards to the right—there, it is perfect. I feel relieved, like a man who has done his duty. Let us sit down now, and have a whiff of the enp—no, of the pipe—that cheers, but not inebriates."

Presently I rouse from a pleasant dreaminess with a voice percolating in my ear, "Now, my fat friend, why did you choose this exact spot?" Puffing out a delicate cloud of the carbonized weed, I reply, "My thin accomplice, a multitude of collateral and unexplainable influences may converge to the formation of one resolve—that is to say, I felt it to be the right spot. To be more particular, we have a foreground here. You remember how a man brought his son to Sir Joshua Reynolds for tuition, saying

\* Excess of muriatic acid will dissolve a portion of the chloride of silver, and so invalidate the accuracy of the test.—ED. PHOTO. NEWS.



that he could already paint the backgrounds; and that Sir Joshua replied, 'Then he has no need to come to me.' Now, what the background is to the portrait, the foreground is to the landscape. Speaking generally, the whole effect of the picture depends on it. If you look through our exhibitions, you will find many pictures that fail in effect for want of power in the foregrounds. When the upper and lower parts of a picture are painted with the same degree of power and technical detail, they have a weakness and flatness of effect quite contrary to the feeling of nature. Observe these pines before us. About ten o'clock the sun will flash among their bold, shadowy branches; whilst that little pool, to the left, will reflect their dark stems in its quiet gleam, composing a powerful foreground that will set off the retiring distances of the view. It is the great difficulty. The finest view without a good foreground will make a poor picture. Another thing in photography is, that the distance must have a degree of distinctness about it. As seen from the other rock we were upon, the hill that enclosed the view was so indistinct that it would have appeared in a photograph as a mere stain. Here, you see, it is different; we have some distinctness of rocky shape and shade. When I came here, some paces to the right, to escape the straight line of that tall pine, which came close upon that other straight pine in the middle distance, jarring the eye, you asked me if one should compose by rules? It is better just to move about till the eye is satisfied.

I believe that any sort of line or curves may appear in any part of a picture, on condition, look you, that it is duly balanced by the other parts, and brought into harmony with the whole. A man with well-poised body and vigorous limbs may walk with what step he pleases, and climb where he will; and he will always look graceful and noble. But a man not so fortunately constituted will find the greatest assistance in crutches; but he must not attempt the same heights as the other, or, when he thinks to be sublime, he will only be ridiculous. If he would go safely, he must go solely by the rule of crutch. That is a parable. If a man has not the feeling in him, there are general rules that will greatly assist him; such as, to repeat the main lines and curves of his picture *with a difference*—i.e., likeness in unlikeness, which is fundamental in all arts that deal with beauty or grandeur; as marked, for instance, cadences of music and rhythm; and more especially in rhyme, the whole charm of which lies in the same sound being repeated in a different form. When there must be some contrasting lines and curves, and varied gradations, and masses of light and shade, and a strong background, a figure seated on a wheelbarrow, or the like, casting a deep shadow along the ground, may do, if nothing better can be had. You ask me, How do you know when a man requires to compose by rule? There are two kinds of artists: the one is born an artist, the other is made after he is born. The one has an impassionate love of nature for her own sake; the other regards her very much as a lay figure that will help him on in his business. Listen to Wordsworth:—

"When like a rose  
I bounded o'er the mountains, by the sides  
Of the deep rivers and the lonely streams,  
Wherever nature led; for nature then  
To me was all in all. The sounding cataract  
Haunted me like a passion; the tall rock,  
The mountain, and the deep gloomy wood,  
Their colours and their forms, were then to me  
An appetite, a feeling and a love  
That had no need of a remoter charm,  
By thought supplied, nor any interest  
Unborrowed from the eye."

The man who feels like this is a born artist, upon condition that he has the faculties required for technical delineation. The made artist has merely the technical faculties, and must work according to the rules he has been taught; and, fortunately for him, there is a plentiful demand for the

sort of pictures he produces, which are apt to run into hard and exaggerated details, just because he does not feel the subtle charm of nature. So in photography. Almost every man, with observation and patient study of good pictures, may himself produce very acceptable pictures, especially if he confines himself to views of no great extent.

Raising myself from the reclining position, I exclaim, What a scene this is! The very silence is sublime! What a mighty calmness of golden glare and tremulous dazzle! How gorgeously that trunk of wood rejoices in the sunshine! And what repose comes from those birches on the opposite cliff, that droop their beauty against the bosom of the sky! And how that tender heat-haze, at the base of the hill, softens the distance, and adds a charm to the whole scene! Photography is impotent here. We require a lower light to throw out shades, and get a mellowing idea of the different distances; for it cannot be too strongly impressed that without due gradations, as well as masses of light and shade, a true idea of nature cannot be rendered on a small scale. The wide glare of view, that is so sublime in its magnitude, would look petty, and lose all character, mounted on eleven by nine inches.

And now, my friends, let us walk round that grand hill and be back for the great event which is to take place at seven o'clock. The tureen of "hotch-potch" has been emptied; the salmon has vanished; and the other things—where are they? Packed very safely away. A philosopher could not have better opportunity of reflecting on the wonderful connection of the inner and outer man, and how the mind is improved in proportion as the stomach is contented; for we are growing as wise as Burns's "two dogs," and as funny as—as everybody is in like circumstances. Our friend of "the wet" is the grand butt of the evening. It seems that when his tent was stretching its legs, one of them gave way, and the bath, plates, and developer fraternised together in a mode that left him nothing to do, poor fellow, but admire nature and feel miserable. But "nae man can tether time or tide;" and as our legs grow conscious that they also have been stretched, we call for the old lady and the candles, having agreed to meet for breakfast at six o'clock.

Accordingly, we have re-assembled at that hour to congratulate each other on—a day of pouring rain! Of course the wit of the company (and a small ingredient of that article goes a far way in such circumstances, when every one is prepared to be jolly) is levelled at me, for having let the fine day slip; and, of course, I fall back on the old tactics of carrying the war into the enemy's camp, by advising them to set to with their developing, and prophesying that half of their plates would be under-exposed, the motto now seeming to be "speed rather than excellence," and that one of them at least will prove to have been exposed to two views. Whereupon I am saluted with a regular chorus of "fox and sour grapes," with original variations. You want to know where I am going to, do you? To have a walk, to be sure, among the hills; they never look grander than in such a storm. You wish me joy? Thank you. And what of photography, do you ask? I have fixed on my view, and shall remain here till I take it in three different lights, giving to each two plates of different exposures, so that I am cock-sure of a good picture. I already feel as if I had it safe in Edinburgh, and were exhibiting it in No. 5, St. Andrew Square. Whereupon one gentleman informs me that it is a pleasant exercise to cook your hare before it is caught; and another exclaims that there are people in the world who have the art of hallooing before they are out of the wood; and I retire amidst a volley of such like entertaining and instructive remarks.

I shall reveal no more of our rural life, except that in our merry-makings we are strictly sober and orderly; for we have come not merely to take photographs, but to lay in a stock of health. In short, we have turned ourselves out to grass.



## THE PREPARATION OF DIFFRACTION GRATINGS.

BY LORD RAYLEIGH, F.R.S.\*

A PHOTOGRAPHER accustomed to either the plain albumen or the Taupenot process will find it very suitable for gratings. The hardness of the surface, which allows varnish to be dispensed with, is a great advantage. In my experiments with plain albumen, the principal difficulty was the purely photographic one of avoiding stains. It must be observed, however, that in actual use the gratings are not seen in focus, and that excellent spectra may be obtained from copies which a photographer would be inclined to throw away at once as hopelessly faint and dirty. The objection to the Taupenot process is the trouble of preparing the plates; but this is much mitigated when the plan is adopted of preparing large pieces to be afterwards cut up.

Among those requiring development, the tannin process is the one with which I have been most successful. In order to counteract the well-known tendency of the film to loosen, a preliminary coating of dilute albumen or gelatine is generally necessary. In the production of gratings the photographer must not be satisfied with merely keeping the film on the glass; the slightest tendency to looseness must be considered highly objectionable. The plates are coated with Mawson's collodion, excited in an ordinary silver bath, washed first in distilled water and afterwards under the tap, and then immersed for a minute in a well-filtered fifteen-grain solution of tannin. On removal from the tannin, they are set up cornerwise on blotting-paper to drain and dry.

For the development of these plates I prefer a solution of gallic acid employed in a dish, though I have obtained very good results by the ordinary method with pyrogallie acid. Prepare the two following:—

- |                      |     |     |            |
|----------------------|-----|-----|------------|
| 1. Gallic acid       | ... | ... | 100 grains |
| Alcohol              | ... | ... | 2½ ounces  |
| Distilled water      | ... | ... | 2½ "       |
| 2. Nitrate of silver | ... | ... | 100 grains |
| Glacial acetic acid  | ... | ... | 2 ounces   |
| Distilled water      | ... | ... | 16 "       |

The dish used for developing should be of glass, and is best cleaned with a little strong nitric acid, which may be used over and over again. The developing solution is prepared by mixing 1 and 2 in equal parts, and diluting with water to half the strength. The alcohol helps to keep the film tight, and the development is well under control. In warm weather the operation may take an hour; but much depends upon the exposure, and still more upon the temperature. The proper point to which to carry the development can only be learned by experience; but the beginner is most likely to err on the side of excess, particularly if he uses pyrogallie acid. If, as is desirable, the film be creamy and thick, the spectra of a candle do not appear to advantage at this stage, in consequence of the unaltered iodide of silver. For fixing, "hypo" is the safest, though cyanide may be used if the film will bear it.

Tannin plates when finished are hardly secure without varnish; but there is considerable risk of spoiling gratings in the operation if an ordinary negative varnish be used. The crystal (benzole) varnish, which is applied cold, is much easier to use, and gives adequate protection.

But the process which I am now most inclined to recommend is that introduced by Mr. Wharton Simpson, and known as the collodio-chloride process. The collodion, which may be procured ready for use from Messrs. Mawson and Swan, of Newcastle, consists of an emulsion of finely divided chloride of silver held in suspension by the dissolved gun-cotton, together with a carefully adjusted excess of free nitrate. After a time the chloride of silver is precipitated, and the preparation becomes useless; but if properly mixed in the first

instance, it will remain fit for use for weeks, or even months. In the production of gratings the consumption is very small; so that, if required for this purpose alone, it is well to order it in small quantities.

In order to secure a proper adhesion, I have found a preliminary coating of albumen absolutely necessary. The white of an egg beaten up with a pint of distilled water gives a solution of sufficient strength. The plates, previously cleaned, are coated in any way that may be found convenient, and then set up on blotting-paper to drain and dry. The principal precautions necessary are to filter the albumen very carefully, and to work in a room free from dust. It will generally be convenient to prepare a considerable number of plates at a time. Though of almost infinitesimal thickness, the film of albumen produces a very marked effect. Without the albumen the skin of collodion will usually come right away from the glass when washed under the tap; with it the adhesion is remarkably good, and the film so tough as even to bear rubbing with the finger while wet.

The plate is coated with collodion in the ordinary way, and, after resting a few seconds, is dried by heat over a spirit-lamp or otherwise. After the plate has been made quite warm, it is put aside in the dark to cool and to absorb a certain amount of moisture from the atmosphere. This may take five or ten minutes. If the plate is used too soon the result is unsatisfactory; but, on the other hand, it will not do to leave it long enough to become sensibly moist. Something will probably depend on the particular sample of collodio-chloride.

The exposure required is about five or seven minutes to the autumn sun. On a hazy day something more may be required; but if there are many clouds about, the experimenter, unless naturally of a good temper, will do well to postpone his operations.

On removal from the frame, the plates may be placed in a dish of water until it is convenient to finish them. They are fixed, without any toning, in a dilute solution of hyposulphite of soda, such as is used for paper prints, and then carefully washed. The most effective washing is a combination of rinsing and soaking. My practice is to rinse the plates under the tap for half a minute in order to remove the greater part of the hyposulphite of soda, and then to allow them to soak for an hour or two in water changed two or three times. After a final rinsing the plates may be set up to dry.

Gratings finished in this way give excellent definition, but the spectra are rather deficient in brilliancy. This defect is of less importance than might be supposed; for in order to see the finer fixed lines, sunlight is in any case indispensable, and with sunlight there is usually illumination to spare. Nevertheless, as gratings are likely to be largely used for the purpose of popular illustration under circumstances where artificial light must be employed, I am glad to be in a position to recommend a simple mode of treatment, by means of which the brilliancy of the spectra may be materially enhanced. For this purpose it is only necessary to treat the fixed and washed impression with a solution of corrosive sublimate. When the whitening effect is complete, the plate must be again washed, and then set up to dry. Considered as a photographic transparency, the grating is reduced rather than heightened in intensity by this process. The cause of the improvement of the spectra will be touched upon presently. These mercury-treated gratings cannot be varnished without sacrificing most of the advantages of the method. I have occasionally applied the same treatment successfully to tannin plates.

When not in use, the finished gratings should be kept in a dry place and protected from dust and other atmospheric deposit. For this purpose they may be put away wrapped in paper. For a short time there is no objection to leaving them standing, face inwards, against a wall; but a better plan is to place them, face downwards, on a flat and thoroughly clean piece of plate glass.

\* Continued from page 232.



The originals from which I have hitherto taken copies are three in number. Two are by Nobert, and contain respectively 3,000 and 6,000 lines, in each case covering a square inch (Paris). On a casual inspection the second, apart from the greater number of its lines, would be preferred, as presenting a more even appearance. The 3,000-line grating is divided into three parts, giving spectra of differing degrees of brightness, corresponding, no doubt, to a variation in the cut of the diamond or other stone employed, a peculiarity which is faithfully preserved in the copies. But on actual trial it is found that the spectra of the 3,000-line grating are much the best in respect of definition; and the same difference is observed in the copies. The superior brilliancy of the close-ruled grating is thus of little or no advantage for the investigation of the solar spectrum. In order to make good use of it, a higher degree of magnifying-power would be necessary than the definition of the spectrum will bear.

The other original grating was engraved by Mr. Rutherford, of New York, and was kindly lent me by Mr. Browning; it contains 6,000 lines to the inch. Owing to a change of residence, I have not hitherto had an opportunity of testing either the original or the copies on the solar spectrum; but I may observe that in respect of brightness they fall far short of Nobert's. This, as I have already remarked, is not always an objection; and the accuracy of division, on which definition depends, is said to be very superior.\*

(To be continued.)

## Recent Patents.

### MANIPULATING CAMERA.

BY S. T. STEIN.

THE following specification describes a camera which the inventor styles the "Heliopictor," its object being to work the wet process without dark room or tent:—

"The improvements consist in providing cameras designed for taking photographic pictures with a self-containing 'dark room' or space in which the several processes of 'sensitizing' the plate preparatory to exposure, and the subsequent operations of 'developing' and 'fixing,' can be performed with facility; the improvements may be thus described:—

"A recess or space is formed in the camera which is designed for having inserted therein, in suitable slides, a hollow case or receptacle, which I call a 'heliopictor,' preferably made of glass or bituminized wood or other material suitable for containing photographic chemicals.

"One side of this hollow frame or case is provided with a space into which the focussing or object glass is inserted, and which, when such glass is not there, can be hermetically closed by a yellow glass frame, which is pressed and maintained against the sides of the frame by strong springs; the opposite side of this hollow frame from the object plate is formed of a yellow glass wall, through which the interior of the enclosed space or chamber and the various operations performed therein as hereinafter described can be seen; this yellow glass wall extends from the top to about two-thirds of the distance of the 'heliopictor,' the space below being constructed in the form of an enclosed receptacle for containing chemical liquids.

"The side of the 'heliopictor' is provided with a hole through which the faucet or stem of a glass or bituminized funnel supplied with a tap can be inserted; the said hole, in order that it will be capable of always excluding the light, is provided with a spring closer or flap.

"The mode of using the camera will now be understood on reference to the following description:—When the object to be taken has been clearly focussed, the object plate is withdrawn, and the glass plate upon which the photograph is to be taken is then prepared for this purpose by pouring over its surface a solution consisting of the following components, viz., 100 parts of water, 25 parts of fresh mixed albumen, 10 drops of glacial acetic acid, and half a part of iodide of potassium; it is then substituted for the

object plate previously withdrawn, in which position it forms one side of the enclosed receptacle or 'heliopictor.'

"At this time the bent faucet of a glass funnel is inserted in the side hole of the 'heliopictor,' the side spring slide or shutter being raised for this purpose: the funnel in this position is in direct communication with the lower portion of the 'heliopictor,' into which is then poured out of a qualified graduated measure as much nitrate of silver solution as will fill the space below the view or yellow pane; at this time the communication between the funnel and the 'heliopictor' is closed, and the case quickly turned into a position that will cause the silver solution to run over the surface of the collodionized glass plate, which operation is continued until the streaky appearance first caused by the flow of the silver solution over the plate assumes a uniform surface. This and the other processes requiring a chemical light are all controlled by the operator through the medium of the yellow glass or view pane.

The 'heliopictor' with the prepared sensitized plate is now inserted into the slide of the camera, the dark slide of which is then raised, and the sensitized plate exposed to the object it is intended to portray in the ordinary manner.

"After sufficient exposure the slide is again closed, and the undeveloped plate is placed in a position to receive the solution employed for developing the picture. The space in the 'heliopictor' occupied previously by the sensitized plate now receives the yellow frame first mentioned through which the light is reflected, and which enables the operator, when the developing solution is poured into the 'heliopictor' (in the manner previously described when sensitizing), to determine when such process has sufficiently advanced, at which time the 'heliopictor' is placed in a vertical position and the liquor allowed to run out of the receptacle, to effect which the faucet and funnel employed for admitting the solution is reversed or turned downwards.

"The 'heliopictor' is then, by placing the funnel in its first position, supplied with fresh water for washing the developed picture, the water as used being constantly discharged therefrom by the reversed or downward turn of the funnel.

"When sufficiently washed the picture is fixed with hyposulphite of soda or other fixing solution, and then well washed in the usual manner.

"The 'heliopictor' previous to the fixing process is ready for employment again."

### ORNAMENTAL BORDERS FOR PHOTOGRAPHS.

BY WM. GAREY.

THE following is a method of preparing ornamental borders for photographs by lithography, or other similar method, previous to albumenizing the paper:—

"My said invention has for its object to obtain improved and superior effects when photographic printing is combined with ordinary printing. A carte-de-visite having the portrait encircled by an ornamental lithographed border is an example of the kind of combination referred to; there are, however, various other well-known ways of combining the two printings.

"Hitherto the common way of combining the portrait or subject photographed on albumenized paper with a lithographed or other separately printed border or device has been by cutting it out and pasting or fixing it on card or paper having on it such border or device, such combination presenting a patched and comparatively defective appearance, owing to one part being more highly glazed than another.

"By my present invention, however, the border or other ornamental or accessory device is lithographed or otherwise printed on the paper that is to be subjected to the photographic process, but previously to such paper being albumenized. The paper is then albumenized in the usual way, and so that the albuminous coating covers the printed part as well as any unprinted portion. The photograph is then produced in the usual manner, care being taken to have it arranged, as regards position, so as to combine and agree in the desired manner with the previously printed device. In this way, when the whole is completed, the entire surface, both printed and photographed, will have a uniform glaze or finish.

"Having thus particularly described my said invention, and the manner of performing the same, I have to state that what I believe to be novel and original, and claim as the invention secured to me by the hereinbefore in part recited Letters Patent is, the preparing of paper for photographic purposes by printing ornamental or accessory devices on it previously to its being albumenized, as hereinbefore described."

\* Draper, "On Diffraction-Spectrum Photography," Phil. Mag., Dec., 1873, p. 419.



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### THE PHOTOGRAPHIC SOCIETY OF LONDON.

THE Photographic Society of London has once more a body of officers: twenty-two gentlemen have been elected, by the popular voice, to fill the vacancies in the council and in the presidential and vice-presidential chairs, and, so far as the acclamation of a somewhat scanty meeting may indicate, the elections gave general satisfaction, as, indeed, an election by universal suffrage could scarcely fail to do. One or two protests—as in such cases generally happens—were made to the effect that an election by the vote of the members at large was not in accordance with law. It was not. There was no law applicable to the case. The original law-makers had never contemplated such a contingency as that which has arisen, and they had not provided for it. If there had been any law applicable, it would have been difficult to apply it, as no body of officers with power to put the law in operation existed. Apart from the general collapse which rendered an appeal to the society at large desirable, at the moment when Mr. Hooper's resolution was passed it had become imperative. Every officer in the society, old and new, of certain legal standing, or doubtful legal standing, with the exception of Mr. Spiller and Mr. Davis, had resigned, and they had announced their resolve to abide only by the result of an appeal to the society at large. No quorum of officers existed to give effect to any law; and, in fact, as Mr. Fry remarked on Tuesday evening, without a government the law was a dead letter. In this state of paralysis or negation of the law, the obvious course—the constitutional remedy, as Mr. Bird phrased it—was to appeal to the source of law, those by whom, and for whom, all law is made, and by virtue of whose will the law alone can derive force. Under any circumstances, it is now generally admitted by all having the interests of the society at heart, that voting for officers should be the right of every member; but under existing circumstances it has become especially imperative. An unhappy feud had arisen in the society, chiefly amongst the local members. We put aside here all discussion as to its origin and merits. This feud had grown in bitterness, and the meetings had become the battle-field of contending factions. As the agitation was chiefly local in its origin and operation, any election or any new legislation decided by personal voting, at a local meeting, must have failed to restore harmony, and was only calculated to intensify the bitterness. This appeal to the members at large, which a general collapse had rendered imperative, was also the most expedient thing for healing purposes which could be conceived, and we have little doubt the majority of the combatants on both sides will lower their points and accept the issue gracefully.

We have not, as we have said, any intention to prolong bitterness by reviving discussion on the origin or conduct of the agitation of the last few months; but it may be instructive to note the tendency of public opinion as displayed in the voting. About three hundred voting papers were sent out, and, so far as we can learn, less than one hundred and twenty returned, the issue very much resembling that common in parliamentary elections. Nearly two-thirds of the members, from various causes, failed to vote. Absence from home, miscarriages and accidents, unintentional neglect, and procrastination will account for some, but there can be little doubt that apathy accounts also for a very large proportion; and the apathetic members, it is tolerably certain, have not had much sympathy with the late agitation. Those who have voted are manifestly the active members concerned in the interests of the society, and ready to maintain them. The gentlemen they have elected consist of fifteen members of the old council, two independent members who have most efficiently supported the old council in recent discussions, one opposed to both sides, and three or four of the requisitionists.

The gentlemen elected have now no smooth path before them. Whoever goes into office stands practically pledged to energetic action in securing a new code of laws, a task of no light magnitude. It is to be hoped that all those elected will accept the office, and address themselves to the new duty, forgetting every heart-burning, and working harmoniously together to restore, as far as may be, that prosperity of the society which has been so seriously imperilled.

### THE COLLODIO-CHLORIDE PROCESS.

THERE appears to be a common agreement amongst the majority of photographers, to the effect that the collodio-chloride of silver process yields results of unequalled beauty, the prints possessing a delicacy and richness not attainable on albumenized paper. There appears to be, further, an agreement amongst all who have given the process any extended trial, to the effect that the results are more permanent than prints on albumenized paper. But there is also a wide-spread opinion to the effect that the process is difficult and uncertain, and involves considerably more trouble than albumenized paper.

Of the beauty of the results there cannot be a doubt. The exquisitely charming prints sent by Mr. Bruce to the last Photographic Exhibition and the present International Exhibition have been the subject of universal admiration, scarcely less on the ground of their peculiar richness, delicacy, and distinction of tone as prints, than on the score of pictorial excellence. Those who are familiar with Mr. Bruce's daily work in portraiture (for all his work is printed by this process) know that the results are not one whit inferior to his exhibited pictures. The examples exhibited by Mr. Hooper, by himself, and by others, attest the same excellence of quality. The exquisitely beautiful little gems exhibited by Mr. Faulkner at the present moment in the International Exhibition are, we have learnt within the last few days, printed by the collodio-chloride process. The superior permanency of the results appears to be attested by all whose experience gives value to their testimony. The argument advanced to the effect that a few pictures, carelessly produced, had faded, is scarcely a weighty one, and, oddly enough, is precisely the same argument which has occasionally, and equally fallaciously, been advanced against the carbon process. Some of the early examples of carbon, from imperfect manipulation, cracked away from the paper, and it was triumphantly pointed out, by conservatives of silver printing, that carbon prints were unstable. Some other early examples were produced in fugitive pigments, and it was still more triumphantly pointed out that they had actually faded! In both cases, of course, the defect was in the



worker or materials, not in the process; and so it has been on some occasions in relation to the collodio-chloride process. In several cases we have known that fading has occurred, and that from the simple and obvious cause that albumen, the chief source of fading in ordinary prints, was used as a substratum for the film of collodio-chloride, in opposition to our frequent cautions against it. Any process may fail in a variety of ways if imperfectly worked; but this is no argument against the process.

The general experience and the general testimony agreeing, then, as to the advantages in beauty and stability of collodio-chloride pictures, the real difficulty which stands in the way of the process consists in the real or alleged difficulties by which it is surrounded. We may remark, *en passant*, that we have at times heard the fact that a process was somewhat difficult to work, alleged as an argument in its favour, as the difficulty would keep it in good hands, instead of allowing it to become common. That patient and careful men do succeed, is illustrated by the fact that Mr. Bruce uses no other process in his daily business as a portraitist. That many others succeed is illustrated by the fact that Herr Obernetter manufactures and sells a very large quantity of collodio-chloride paper, having some years ago, as he informed us, used three hundred pounds weight of silver in preparation of the emulsion. In America the process is very extensively used for printing on opal glass, one house alone producing about two thousand opal pictures monthly by its aid. But still the fact remains that in this country it is comparatively little used, and those who have tried it have found difficulties sufficient to deter them from its extended adoption.

Many of the difficulties described are, we are satisfied, unnecessary ones. Prior to our introduction of the process to photographers, at a meeting of the Photographic Society, we had worked it out carefully during six months, trying some hundreds of experiments, and producing some hundreds of prints, many of which we now possess in a perfect state of preservation. As every step we had to take was new, without precedent to guide us, we naturally met in the untrodden path with almost every difficulty possible in the process. The first trouble was lack of vigour. Chloride of silver alone gave a weak grey image: with excess of nitrate, and on an English paper sized with animal matter, we obtained vigour enough; but the free nitrate combining with an animal size, suggested doubtful permanency, and we felt that it would not do to rely upon the quality of the paper for vigour: it must be obtained from the emulsion itself; and just at this juncture, Mr. Bovey suggested to us the use of citric acid, which met the difficulty at once. Other organic substances were tried; but, on the whole, we still prefer citric acid.

The next series of difficulties had reference to the toning. In the ordinary toning bath the action was too rapid, and blue or grey blacks the result. An old acetate bath answered well; but finally we worked out the method with sulphocyanide of gold, which has been since adopted by almost all collodio-chloride workers. Another difficulty arose from a tendency to irregular patchy toning. This arose from two causes: one, the extreme sensitiveness of the surface to every touch of the fingers, which produced irregular markings in the toning; and another arising out of the use of unsuitable impermeable collodion, which absorbed water irregularly, and so caused uneven toning. Both these sources of difficulty are easily met by proper precautions.

The chief difficulty which seems to have beset many experimentalists was one with which we had but little trouble: we refer to the tendency in the paper to curl up when in the toning and fixing solutions and washing waters, the film occasionally splitting away from the paper. This tendency appears to characterize the examples of paper in commerce prepared by Herr Obernetter and others, more frequently than those samples of

paper which the experimentalist prepares for his own use. The cause is not difficult to trace, and the remedy should not be difficult to apply. The cause is two-fold: the use of a somewhat horny contractile collodion, and the use of a soft absorbent paper to sustain the film. The result in such a case is inevitable. The horny, repellent film of collodion is not readily penetrated by the water, and never freely absorbs it; but the soft, absorbent paper, readily absorbing water, naturally swells and stretches on that side which is not protected by the impervious collodion; and as the other side cannot as readily stretch, the curling up is inevitable. The remedy is simple, and consists in the use of a less repellent collodion, and of a less absorbent paper. The chief defect we have found, in commercial samples of collodio-chloride paper, has consisted in the use of a common absorbent paper, which has led to the trouble in question. With a firm, hard paper, not more greedily absorbent of water than the collodion with which it was coated, no such difficulty could possibly occur; and we should strongly advise any manufacturer of such paper to incur the cost of a paper of better quality, as well as to use care to avoid collodion over-horny and repellent, however desirable collodion of that character may be in securing a brilliant surface.

So far as we know at the present time, the collodio-chloride paper of Herr Obernetter is the only paper of the kind which can be obtained ready for use in this country; but there are and have been several manufacturers of such paper on the Continent. Some months ago we were favoured by Mr. Archer Clarke with a sight of an exceedingly perfect example of collodio-chloride printing produced in Lübeck, and also with a perusal of a letter and circular by Herr Linde, who prepared the paper for sale, and was also willing to impart his instructions for securing perfect results for one hundred thalers (in round numbers about £15). We subjoin some extracts from the circular in question which may interest our readers, as suggesting possibilities, although, of course, some of the statements must be taken *cum grano salis*. Herr Linde says:—

My paper is, in truth, free from all the defects which have caused many of my colleagues to give up the use of collodion paper, and to revert to the albumen paper, in spite of all the deficiencies which attach to the latter as compared with the former. The enamel paper remains flat during the toning and fixing, and does not roll up; it does not peel off; it yields in the gold bath each tone, from sappy brown to bluish black; it has no iron stains; it is very delicate and brilliant, and it is equally good in all parts; it is very safe against injuries; it keeps for from six to eight weeks perfectly white; it permits obliterations, retouching, and colouring, like albumen paper. The impressions on this paper do not fade, and do not afterwards become spotty, because the hyposulphite of soda that is applied in a weak solution is easily washed off, and silver albuminate could not be formed.

The *brilliance* and *fineness* of the images produced on collodion paper, which repeat the most subtle delicacies of the negative in a way that albumen paper never can do (since, in the first, the image is received only in the film of collodion, and does not penetrate into the paper stuff), are certainly acknowledged.

#### MANAGEMENT OF THE COLLODION PAPER.

Like every photographic paper, the enamel paper also ought not to be touched on the upper side with perspiring fingers, because in that way reddish brown spots are generated. If we have touched the negative with sweating fingers, we must rub off such marks with cotton, or else corresponding red spots will show themselves on the images.

The negative that is to be adopted must be finely worked up, and not hard. A good retouching with a pencil is advisable; some indispensable covering over of the transparent portions occurs upon the back of the negative, for which Berlin blue or brown ochre, or white pigment in a tube, mixed with a solution of gum arabic, are very well adapted.

The printing is done in shadow, not much darker than the completed images are to be. The enamel paper is very remarkably more sensitive to light than the albumen paper. The impressions must be washed out in spring or rain-water three times changed, and then toned in the following gold bath:—

No. 1.—Sulphocyanide of ammon. ...	80 grains
Hyposulph. soda ...	7 "
Distilled water ...	6 ounces.



No. 2.—Neutral chloride of gold ... 4 grains  
Water ... 6 ounces.

The solution No. 2 is mixed in equal portions with solution No. 1; in fact, No. 2 is poured into No. 1. The impressions are placed one by one into the gold bath, quickly dipped, and, if we are toning several at the same time, they must be moved a little by shaking the vessel. Here it is not advisable to lay many prints one upon another, because the liquid cannot affect them all equally, and the prints receive red spots; nor can the work be so well washed over. The toning is brought to an end as soon as the desired colour is attained. A few trials will best instruct as to the proper moment.

The toning process goes on tolerably rapidly until the solution becomes milky. By the addition of solution No. 2 we may again revive the toning solution; but it is more important to make a new mixture, because, by the employment of quite small vessels, we use a less quantity, and thus the consumption of gold remains a scanty one. We may admit the hyposulph. of soda from solution No. 1, but then the images more easily become blue. After the toning we place the impressions in pure water, and then fix them in a solution of—

Hypsulph. soda ... 1 part  
Distilled water ... 20 parts.

We wash out with water, that must often be changed, and, as customary, cut out the images, when half moist, with a knife, mount, and press them.

The erasure of spots takes place as with albumen paper. The addition of gum is advantageous and agreeable for painting; and working by Grashoff's prescription (water colours strongly mixed with gum) is very easy. Here it is to be recommended, after the local colours have been laid on, to pour thin collodion over the image, and then further to work. The wash of collodion protects the first coat of colour from obliteration during the subsequent painting.

By way of supplement, we rub the prepared images with the well-known waxen paste (wax and turpentine, or lavender oil), in order to render the retouching invisible, to prevent its being wiped off, and, in the case of retouching with gum, to prevent the impressions from sticking together. Some photographers also once more wash the images with plain collodion.

## A FEW REMARKS ON THE PRESENT ASPECT OF SILVER PRINTING.

BY W. T. BOVEY.

No longer embarrassed by the distracting influence of novel discoveries, photographic experimentalists, in lieu of wasting precious time in "prospecting," are wisely retracing their steps to explore anew the old fields which were long since traversed over in haste. And it is somewhat curious to note that a printing process, persistently said to be doomed to oblivion by the beautiful and ingenious invention of Mr. Swan, is one which at the present time is receiving the largest share of attention; and thus is amply borne out the soundness of my prediction when, years ago, I expressed belief that silver printing and carbon printing were destined to fill independent positions, each taking its place of usefulness, that cannot by either be exchanged or supplanted. The magnificent examples of enlargements produced by the Autotype Company at Ealing indubitably show that in such work carbon printing has turned into its legitimate channel. And the Woodbury-type, by its rapidity of production and beauty of results, has obtained a firm hold on popularity. The Heliotype process has its successful future, and only awaits enterprise and ingenuity to remove its present defects. Whilst silver printing, as chief favourite, stands unrivalled in the perfection of its production, and has now new hopes of the stigma of instability attached to its character being removed by the new turn taken in the review of remedies in that direction now engaged in by experimentalists.

In connection with silver printing, a German writer has recently favoured us with his opinions on the matters of weak and strong sensitizing solutions, the latter being strongly advocated by the writer in question; and, to a certain extent, I fully concur in his views. There can be no greater error committed than to suppose that the use of a starved silver solution is either economical, politic, or discreet. On the other hand, in these days of heavily coated albumenized papers, strong silver baths cannot be

resorted to without danger of producing the evils, in a highly aggravated form, which they are expected to obviate, as the process of "coagulation," if too suddenly and thoroughly accomplished, precludes the necessary action of absorption, and a weak, spotted image, on a highly-polished surface, is the result of the mistake.

A bath composed of—

Silver ... 40 grains  
Nitrate of soda ... 20 grains,

might be used with safety until the supply of silver is reduced to thirty grains. Below that it is unsafe to go. Probably the best test that can be applied is to make a pause when in the act of floating the paper, and until the brief stoppage induces the production of a line, as far as the supply of silver is concerned, all might be considered well.

The next matter relating to silver printing which appears to receive attention is one of spotting—a subject on which I have already exhaustively written as far as the spots met with in ordinary every-day experience are concerned. There is, however, one form of spots that still requires investigation, which, on a recent occasion, was the subject matter of an earnest appeal for help, in a letter to the *News*. White spots, small in size, and irregularly scattered over the print—thus were they described; and with some amount of eagerness I scanned the answers tendered by sympathetic correspondents to the prayer addressed to them for aid. By some curious mischance all the communications in question seemed to miss the true mark; and such being so, it might be worth a little of space to describe what I believe to be the immediate cause of the perplexity-raising mischief. It should be remembered that those minute spots are of two kinds, and originate from two distinct and separate causes. The first (occasioned by defects in paper), if viewed with the assistance of a microscope, reveal the presence of metallic centres around which are described circles of insoluble hyposulphite of silver. These occur chiefly in the whites, or in those tones which graduate nearest white. Where the printing is deep, the reduction of the silver to a sub-salt, nearest the metallic state, precludes the possibility of yellow white spots generating. The form of spotting which seems to escape the grasp of understanding, and to which I have already alluded, is one, however, similar in form to those just described, but altogether different in colour and origin. In such as these no metal or other centres exist. They are simply white splashes that form because of the removal of the silver by some eating process; and this action, I have learnt from careful observation, is set up by an imperfect system of washing in metal vessels, the syphon abomination being the chief agent in destroying the chance of permanency that its use is resorted to for the purpose of procuring. Theoretically, an ebb and flow of water in the washing arrangement certainly appears to be the only method that can insure success in practice; but actual experiment goes to prove that, although perfect in theory, it is found to be far from perfect when tested by an actual trial. If we watch a batch of prints as the water is escaping through the syphon, we perceive them twisting in the eddies, now on one side, anon drifting toward the other, until, with a sudden motion, they seem to leap toward the side of the trough, against which they cling, and are soon afterwards left dry until the return of the replenished water.

Now, as long as the washing apparatus is new, or has had brief use, no injury arises to the prints during their season of suction; but when, with constant use, a deposit forms around the side—or, rather, I might say, when a crust is formed by a combination of the metal with the sulphur—there lurks danger unsuspected, and as the spots thus wrought in the prints are not always directly visible, their cause cannot even be guessed at. Wooden troughs for washing purposes are by far the safest if scrubbed daily, and even these should never have any metal placed



within contact distance of the prints; indeed, the safer and by far the better plan is to ignore the syphon altogether, as by experiment I have found they work more harm than they effect good. An india-rubber tube leading the supply at the bottom, and an escape pipe to conduct the water from the top, insures non-contact, and as thorough a washing as the prints can get by any other automatic method. The best means, however, of eliminating the hypo are such as are brought about by chemical agency.

For some time past I have been using a very perfect and reliable mode, the modification of which alone is of my own contriving, and unfortunately I am precluded from imparting particulars by the author of the process, who, I doubt not, will ere long remove the bond of secrecy when he is brought to see the folly of making it the subject of a patent. One lesson learnt from the practice of the secret means referred to I might, without dishonour, dwell on. Among other virtues, the chemical agency I now use for removing the hypo has the remarkable property of seizing upon and spoiling improperly fixed prints. Noticing this peculiarity, I proceeded to experiment, and have discovered that the whites of a print take longer to fix than the other portions of the picture. A darkly printed vignette will be fixed in ten minutes, whilst the white margin requires twenty. The moral gleaned from this has induced me to extend the time of immersion in the hypo for prints with extensive whites, and I believe the fruits have repaid the cost of time. Fading prints commence to fade in their whiter parts. Here we have an explanation.

## MY EXPERIENCES IN PRODUCING NEGATIVES IN PLUMBAGO.

BY W. B. WOODBURY.

BLACK-LEAD, a substance hitherto only associated with fire-grates and stoves, is about to play an important part in photography, and will soon be one of the most useful articles the photographer possesses.

It is now some eight or twelve months since Messrs. Geymet and Alker, of Paris, published a small work on the collotype processes, in which ample directions were given to produce a reversed negative by the use of plumbago. Extracts from this work were published in our journals, but, like new things, I suppose, very few people took the trouble to try it; and it is only now that M. Obernetter, of Munich, has received a gold medal from the Vienna Society for publishing his process, that the public are beginning to open their eyes to the great benefit of this method over all others.

There are many ways of reproducing negatives—by copying, by contact with wet or dry plates, by carbon, albumen, &c.—but which all require a double process; and there is always a something about them in which the charm possessed by the original negative is lost.

Now, in the process of reproduction of the negative direct from the negative, with no positive interference, there is no such loss—in fact, by careful manipulation, a negative may be reproduced, a print from which and one from the original being placed side by side, the producer himself could not distinguish the difference. But that is not all. A negative having every detail, but lacking in brilliancy, can be reproduced with the very brilliancy it lacks, and so be very much superior to the original. Again, from a too dense negative, one of the right printing density can be obtained. But in these days of what may be termed fancy printing, the results of which are only obtained with considerable time and labour, how great is the boon!

Suppose we wish to obtain an oval vignette carte on a black ground, this would first involve the careful vignetting of each print, then the use of a mask to shade the centre while the outside darkens. How much time would be saved were all these requirements in the negative itself!

In the plumbago process this would be accomplished as follows:—The prepared glass would be first exposed under the negative, a vignette glass or other method of vignetting being adopted; the exposed plate would then be covered with an oval piece of black paper, and the outside exposed to light. On developing this picture with the plumbago, we should possess a negative giving at one operation all we require, and what would otherwise have taken considerable care in manipulating. By carefully developing from the centre, outside, a vignette picture similar to those produced in Russia would be the result. But perhaps one of the most important uses of this process will be the production of combination negatives instead of combination prints, which means immense saving of labour, these sort of prints having always represented such an outlay of time as to be necessarily expensive. One thing to be borne in mind is, that in this process things are all reversed, the shorter exposure giving more detail, and the longer a hard, chalky effect; but still there is great latitude, as a plate slightly over-exposed may, by leaving in a damp place, be made to develop all right.

My first attempts were made some six months ago on obtaining a copy of Geymet and Alker's work, but the results I got were by no means encouraging. I followed the instructions to the letter, but my results were coarse, showing lines of the brush over the parts that should have been transparent. Having, however, had, during a late visit to Germany, an opportunity of seeing some of Obernetter's results, I determined to try again, and this time my trials were very satisfactory, but this time I did not adhere strictly to the instructions; I omitted the breathing on the film, and found out that this had been the sole cause of my earlier failures.

To any one trying this process, let me give him this caution: never to breathe on the plate, except in rare cases, as bringing up an under-exposed foreground, &c. It is, I believe, impossible to moisten the plate evenly by the breath; far better to let the plate remain longer in a damp place, until it gets in to the proper state.

The solution I used was—

Gum	...	...	...	1 drachm
Glucose	...	...	...	3 "
Glycerine	...	...	...	10 drops
Bichromate of potash	...	...	...	30 grains
Water	...	...	...	2 ounces

filtered carefully through blotting paper while warm, and kept in a bottle for use. No cork should be used, but a piece of glass kept on the bottle, as the slightest particle of solid matter getting into the solution is fatal to good results. The plate must be carefully brushed, to remove all particles of dust or fluff from the cleaning cloth, these particles forming a nucleus which, by the repeated passing over of the brush, forms a black spot in the negative.

I cannot say how long this solution may be kept, but I found it as good after a week as when freshly prepared; and as the ingredients are so inexpensive, and the solution so easily prepared, no trouble need be held on that score. One of the difficulties of the process is the tendency of the solution to run away from the glass when inclined to pour off the surplus; and, curiously enough, the more carefully the glass is cleaned, the more the solution seems inclined to leave it. Doubtless something might be added to prevent this, but by using the solution warm, this is not so likely to occur.

The glass, cleaned and carefully dusted, was coated with the mixture, and the surplus being poured back, was held over a Bunsen burner till dry, a piece of blotting-paper being drawn along the two downward sides to prevent the solution thickening at those parts. When dry, and still warm, it was placed in the frame in contact with the negative, an exposure of between two and three minutes being given in the sun; on taking out of the frame the plate was left about five minutes, and the plumbago softly

applied until the image gradually obtained the required density. It was then coated with a thin normal collodion, and dried; when thoroughly dry, placed in a bath of water six parts, and hydrochloric acid one part, which instantly dissolved the yellow of the bichromate. When again dried, the negative was varnished, and the operation concluded. By this means were produced the negatives I had the pleasure of showing at the last meeting of the society.

There are one or two points that I noticed in my short experience that may be useful to those who try this method. First, the plumbago negative should not be developed long enough to appear as dense as the original, otherwise it will print too hard, the deposit being of a more non-actinic nature than that of the silver. I noticed in all Obernetter's reproductions that they were apparently much thinner than the originals, although prints from them were alike.

An underground room is best adapted for the development, the greatest freedom from dust being an absolute necessity. An exceedingly fine sample of plumbago is necessary: that I used was one prepared by Messrs. How for coating electrotype moulds. A very fine sample is also prepared by Messrs. Newman, of Soho Square.

Always use a glass rather larger than the negative, as there is a tendency to give the centre an over-dose, and neglect the edges. I have not tried taking the film from the glass to reverse it for ordinary printing, as my aim was to produce a reversed negative, but I apprehend no difficulty would be experienced, a thicker sample of collodion only being necessary.

One other advantage in these negatives is, that they are permanent, which cannot be said of silver negatives, as so many are found to darken by much printing; and if there is any one substance more permanent than others, I think it is black-lead.

## ON THE PRODUCTION OF ENLARGEMENTS UPON ALBUMENIZED PAPER BY DEVELOPMENT.

BY CARL MATZNER.\*

*Preparation of the Paper.*—In the first place, I prepare a bath of nitrate of silver, dissolving one part of silver in eight parts of water, and to it I add, as soon as the crystals have been completely dissolved, the tenth part of citric acid, previously dissolved in a little water. During the gradual addition of the acid the bath is continually shaken.

I choose good stout albumenized paper, and immerse the same in the silver bath so that the back, as well as the front, becomes impregnated with the solution. After three minutes, I hang the sheet up in a perfectly dry place, and allow it to desiccate slowly. The paper is more carefully kept from the light than ordinary sensitized paper, for it is somewhat more sensitive. It may be prepared a day or two before it is required, for the acid in the bath allows of its preservation in good condition for a week or more.

*Printing.*—The printing is done either in a pressure-frame, or in the solar camera by enlarging. For the latter case this developing process is especially suitable. I allow the printing to go on for a fourth or fifth only of the usual time, so as to obtain a weak, but perfectly visible impression, and then put the print away in the dark room for further treatment hereafter.

*Development.*—The development may be conducted the same day, or at a later period. If the pictures were treated with gallic acid solution—even with the addition of acid—the whites would change to yellow, and finally become brown. I protect myself from such a change in the following manner:—I first lay the sheet, which has

been partially printed, in a clean dish large enough for the purpose, in a well shaded apartment, and pour over it some distilled water, just enough to cover the bottom of the dish and wet the sheet on both sides. The addition of a few drops of the silver bath above described to the water in the dish is of great advantage. I tilt the dish a little, so that the liquid therein runs to one corner, and add (when a whole sheet is in the dish) an ounce or an ounce and a-half of glacial acetic acid to the liquid. This is then allowed to run under and over the picture, and to penetrate it for about five minutes. After this I proceed with the development. The albumenized paper has been rendered transparent by the acetic acid, and the great point has now been achieved, for it is possible to watch the action of the gallic acid from the back of the print.

I slowly pour over the picture a concentrated solution of gallic acid, which has also been acidified with acetic acid, and gently move the dish to and fro. The picture slowly develops, and, after about half an hour, becomes very vigorous and dark, if the temperature is not too low. In the course of the operation one can see whether it is possible to secure the right amount of density. If this cannot be attained, then a few drops of the first-named silver solution are added, to give intensity. As the fixing agent diminishes somewhat the intensity of the picture, it should be thoroughly developed. It is washed thoroughly, until all the chloride of silver and the acetic acid have been altogether removed—at the last with distilled water—after which the toning is proceeded with.

*Toning.*—Any toning bath with which one is familiar may be employed; but it must be used only half as strong as usual. I pour the water off the picture, and pour on the toning solution, rapidly agitating the liquid the while. On the first apparent signs of a change of tone I take the picture out, and dip it into a hyposulphite bath ready to hand (one part soda and twelve parts water), in which it is thoroughly fixed. Finally, the picture is carefully washed as usual.

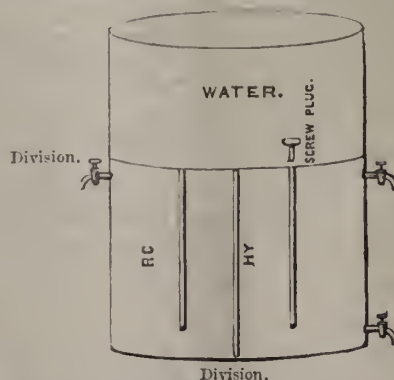
To enhance the tone of the pictures, a little gold solution is added the day before to the fixing bath, the latter being shaken the while. The process is a little costly, but the pictures produced are of great value. Gold solution is added until the fluid becomes quite milky. The same bath may be employed many times before it becomes unserviceable.

## Correspondence.

### LANTERN IMPEDIMENTA.

DEAR SIR,—Seeing in the NEWS your readers going in for "trouble" in re oxyhydrogen light, and having worked the same at our theatre here and various places for years, let me save them wasting money.

Don't buy any bags and don't carry any weights. I will give my plan to your readers in the rough. The contrivance is



all in one, and lighter altogether than one weight. The only thing you want when you get to your exhibition room is water;

\* Read before the Vienna Photographic Society.



you can get that anywhere. Sufficient to fill a vessel the size of a milk churn will last some hours.

To work it, half fill top compartment and both lower ones with water, and screw in plug in hydrogen side. Connect top tap to gas pipe with flexible tube, and turn on bottom tap: water goes out, gas goes in.

Make the gas straight from retort, in oxygen side, which saves purifier. As gas goes in, water comes up pipe, a short length combustion tube. You can see what is going on. In working, as the gas is used from two top taps, the water in top takes its place. When you have done, throw away water, and pack things in top, all one package. Taps should unseal, then they don't get knocked off.

LEO.

## Proceedings of Societies.

### PHOTOGRAPHIC SOCIETY OF LONDON.

The adjourned special meeting of this society was held at the Architectural Gallery, Couduit Street, on the evening of Tuesday, the 19th inst., Mr. JOHN SPILLER, F.C.S. in the chair. The minutes of a previous meeting having been read.

Mr. PRITCHARD pointed out that they scarcely accurately recorded the fact that Col. Wortley had moved an amendment on the first resolution passed, and, after a brief conversational discussion, the minutes were confirmed.

The CHAIRMAN stated that the committee entrusted at the last meeting with the duty of carrying out the elections had been engaged for two hours in examining the balloting papers, and would complete their duty and be able to announce the elections in the course of about an hour.

Mr. HUGHES, in the meantime, wished to enter his protest against the whole proceedings as unnecessary and illegal. There was no need to appeal to the members at large: the law provided for the election of officers by the voting of persons present at a meeting duly announced. The resolution was not in accordance with law, and the general appeal was not in accordance with law. Himself and his co-requisitionists were kept at the commencement of these proceedings so close to the punctilios of law, that bitter feeling was generated, and now the law was being ignored altogether. The manner of carrying the thing out was as bad as the thing itself, and he protested against it altogether.

Mr. SAMUEL FRY could not but feel that the protest and objections of Mr. Hughes were groundless and unnecessary. The assertion of precise points of law was surely ill-timed when the society was in a state of revolution. It was idle to talk about law when there was no government in existence to carry any law into effect. The first thing to be done was to obtain, by the will of the members at large, an executive, and then, if any law had been overstepped, obtain a bill of indemnity. He was satisfied that the step which had been taken was the very best which could have been adopted, even if it were not in accordance with law, a point which was by no means certain.

After some further irregular discussion, the committee presented their roturus of the voting, which the chairman read out, giving the following as the officers elected by the general voice of the society:—

*President:* John Spiller.

*Vice-Presidents:* Dr. Mann, G. Wharton Simpson, and Valentine Blanchard.

*Council:* Captain Abney, William England, Sebastian Davis, H. Baden Pritchard, J. H. Dallmeyer, W. Bedford, George Hooper, William Mayland, Dr. Farre, Walter Bird, W. B. Woodbury, R. Crawshaw, Professor Stokes, H. P. Robinson, Col. Stuart Wortley, O. G. Rejlander, F. Howard, Samuel Fry.

The name of Mr. Hughes was also included in the list of elections, but, as he declined to serve, the next highest name in the voting was substituted.

Mr. WALTER BIRD said he thought the society having adopted the constitutional course out of their difficulty, and appealed to the source of law, the members at large, he thought every one ought now to acquiesce in the result, and work together harmoniously for the good of the society; he hoped, therefore, Mr. Hughes would accept his election, and duly act.

Some further conversation followed, in the course of which Mr. Hughes again declined to act. A conversation on the number voting then ensued, the number being variously stated as 105, 110, and 120 by different members of the committee, about three hundred voting papers having been sent out. Mr. Stillman objected that no member of the council had been elected by a

majority of the members. Mr. Bird said that many were elected by a majority of the members voting, some having received as many as seventy votes. A further conversation arose on the mode of filling up vacancies in case any of the elected officers declined to act.

Mr. SPILLER expressed his appreciation of the honour he had received, and bespoke the consideration and forbearance of members in relation to his discharge of the important duties he had to assume. He proposed a vote of thanks to Major Malcolm and the committee who had undertaken the arduous duties in connection with the election. Major Malcolm responded briefly, and after a vote of thanks to the chairman the proceedings terminated.

### SOUTH LONDON PHOTOGRAPHIC SOCIETY.

The usual meeting of this society was held on the 14th inst., the Rev. F. F. STATHAM, president, occupying the chair.

After the reading of the minutes of the previous meeting, Mr. E. Gaele was proposed and admitted as a new member.

The SECRETARY announced that there was no paper before them that night, and exhibited some pictures he had made several years ago, which led to a conversation on the subject of fading.

Several negatives on Mr. Kennett's gelatino-pellicle were exhibited by that gentleman, after which it was intimated that the next meeting would be devoted to a demonstration of Obernetter's method of reproducing negatives.

The meeting then separated.

## Talk in the Studio.

SUNDAY PHOTOGRAPHY.—We hear complaints from time to time, sometimes on religious grounds, sometimes on the score of illegitimate competition, as to the practice, in some large provincial towns, of Sunday photography. An effort has recently been made in Plymouth to suppress this trade as a nuisance. We make the following extract from a local paper, which shows the issue:—"At the Stonehouse Petty Sessions, before J. B. Willeox and C. Simpson, Esqrs., four charges of trading on Sunday were heard. The first was that of Mr. John Wakeham, for whom Mr. J. E. Curteis appeared. P.C. Copplestone stated that on Sunday, April the 26th, at 10 a.m., he was on duty in Stonehouse. He went to the defendant's shop, and had his photograph taken, for which he paid 1s. 1d. Mr. Wakeham promised to send the cards, but had not done so. Witness was dressed as a marine.

—By Mr. Curteis: The negative was a good one. I did not tell Mr. Wakeham that I could only come on Sunday.—In defence, Mr. Curteis submitted that there was no ease made out; for the mere taking of a man's likeness was not an offence, because the article was not either finished or delivered.—The Bench did not think that that affected the case in the least.—Mr. Curteis then contended that the business of a photographer did not come within the meaning of the Sunday Trading Act, for it was not a trade, but a profession and an art. An attorney, for instance, would not be liable. Perhaps their worship would say the words 'any other person or persons' were very wide; but he maintained that they did not at all apply in the present instance. The point was, whether the Bench held that a photographer was a tradesman.—The Bench thought that it was a mechanical operation; whereupon Mr. Curteis said that there was, without doubt, a considerable amount of art required to produce a good likeness. He then cited a case which went to show that it did not come within the Act, and in which Mr. Justice Bailey said that he was inclined to think it applied only to manual labour, and the visible performance of some work. He would say, on behalf of Mr. Wakeham, that he had kept his premises closed for seven years, and only opened his side door now in order that he might compete with, and not be outdone by, others. He had never allowed his man to stand at the door and tout, as had some, nor would he keep his premises open at all in the future.—Supt. Brutton explained that he had been specially requested by the authorities at Stonehouse to take proceedings in these cases, for the nuisance was becoming almost intolerable.—The Magistrates, after consulting in private, said they could come to no other conclusion than that the defendant was a trader within the meaning of the Act, and a fine of 5s. and costs would be imposed. They trusted that this would be the means of putting a stop to a state of things which was to be deeply lamented.—Michael Dee, Joseph Hooper, and



William Barkley, all pleaded guilty to a similar offence, but stated their intention not to offend again.—A fine of 5s. and costs was inflicted in each of these cases."

**PROGRESS OF PHOTOGRAPHY.**—It would require a volume to set forth the many remarkable applications and processes, even of comparatively recent date, involved in this astonishing art. Something, however, may here be added in regard to the rapidity of photographic action. It is estimated that 1-27,000th of a second is sufficient to fix the solar image, yet this is a long time in comparison with that in which photographs are taken by the electric light. Experiments have shown that the duration of the illuminating spark does not exceed 1,000,000th of a second, yet a clear and distinct photographic image is obtained by a single electric discharge. By this means may be shown the real form of objects to which a deceptive appearance is given by their rapid movement. Thus, if a wheel on whose side any figure is drawn in conspicuous lines be made to rotate with the greatest possible velocity, the figure will present to the eye only a series of concentric bands of different shades; but let it be photographed by the electric flash while in motion, and the wheel will appear stationary, with the figure perfectly well defined.—*New York Times.*

## To Correspondents.

**CAMEO.**—The spotting or retouching of prints intended to be encased with gelatine and collodion presents some difficulty, as, without great care in manipulation, ordinary water colour would be removed by the application of the gelatine. There are two modes of meeting the difficulty: you must either employ a medium with the ordinary water colours, which, on drying, becomes insoluble, or apply some insoluble coating over each retouching mark. Such a medium as "Newman's Preparation" answers well. It mixes readily with the water colour, but becomes insoluble when dry, and prevents the water colour from being softened or washed off when again moistened; or, failing this plan, apply a touch of plain collodion with a camel-hair pencil to each retouching mark. This will protect it on applying the gelatine.

**R. H.**—Much depends on the class of work you intend to do, and on your personal taste and desire. The following are good proportions for a studio, and will answer well if they answer your convenience: about thirty feet long, twelve wide, fourteen feet high at ridge, six or seven at eaves, the sides facing north and south; each end opaque; north side and top, glass, except about six feet at each end and two feet at bottom; south side all opaque, except about eight feet top and side, which will usually be kept covered with blinds, and only used when specially wanted. Common sheet glass will answer well. 2. We cannot recommend makers of lenses and cameras by name in this column; but you will find some names which you can perfectly trust in our advertising columns. The lens you have may or may not be a good one. You can only tell by trying. French lenses are generally variable.

**LEX.**—It is scarcely worth discussion at present. No doubt several members present saw the matter clearly enough, but did not think it worth discussing. Col. Wortley brought forward his suggestion as an amendment, and insisted that it should be put before Mr. Hooper's amendment was moved, as two amendments ought not to be before the meeting at once. It was intended to enact something which the original resolution did not enact, and something of which no notice had been given. If questions of law were worth discussing in relation to the chaos of the moment, Mr. Hooper's amendment was just as legal as Col. Wortley's, or more so, because the absence of notice was due to a disorganised executive, not to Mr. Hooper, who had sent his notice in time. But the truth is, that law being in an absolute state of collapse for want of administrators, an appeal to first principles was the only common-sense remedy. The rude words used we cannot discuss. You will note that we omit such episodes from our report. Such words are occasionally used in the heat of a moment, but they must always be deeply regretted, and have generally been followed by apology, as they were at last week's meeting. In any case, they are better forgotten.

**J. C. M.**—The process is, to some extent, experimental still, and no details have been published. Starch was used many years ago. A thin preparation of starch filtered through muslin is employed. You will find full details of alkaline development in back volumes of the *News*, and in our last two or three *Year-Books*. It would occupy more space to describe in detail than we can devote in this column.

**AN OPERATOR.**—The circumstance you describe is curious, and it would be difficult to suggest a cause without examining the instrument. Does the tube of the lens project far into the smaller camera? Is the camera properly blackened inside?

**Pyro.**—Our own plan has been to replenish the bath from time to time, as it got low, by adding a forty or fifty-grain solution to the thirty-grain bath, and we have never noticed the working become slower. If it did, we should neutralize and sun very thoroughly. Are you sure that the loss of sensitiveness is due to the bath? It may be the collodion, or the developer, or the cutting off of light by the advancing growth of foliage near the studio. We prefer crystallized nitrate of silver.

**G. B.**—There is no reason why a good half-plate lens, requiring twenty feet between the sitter and camera, should not answer for card portraits. There is, however, one difficulty which may occur: if the atmosphere is thick, or misty, or dusty, it becomes a mass of illuminated medium between the sitter and lens, which sometimes causes a flat, foggy effect. It is also very important to shade the lens from reflections and light of all kind except that reflected from the sitter. 2. An ordinary camera is suitable for taking ferrotypes, but you must take care that the spring at the back of the dark slide does not press upon the flexible plate so as to bend it. You can place a plate of glass at the back of the ferrotype plate, and this will remove all trouble and danger.

**F. M. D.**—Spots of various kinds may appear on prints, and from many reasons. We cannot even venture a suggestion without an example, and we have not received one. There was no print enclosed in your letter. Possibly an empty wrapper we received, referred to below, might have been yours.

**G. G. GRALIN.**—The defect of which you complain is due to the peculiar character of the collodion, which is very horny and repellent. Try adding a few drops of distilled water to each ounce. Try also immersing the plate before it is so fully set, and be very precise in allowing the plate to rest on clean pieces of blotting-paper in the dark slide.

**A BEGINNER.**—Uneven toning may proceed from a variety of causes. A very common cause is the immersion of several prints in the toning bath, which lie together in partial contact. This will cause uneven patches. They should never be allowed to remain still or stick together. Sometimes handling the prints with soiled or perspiring fingers will cause such unevenness. Sometimes a print will be more fully charged with free nitrate at one end than the other from the position in which it hung in drying, and this will cause uneven toning.

**W. FERGUSON.**—The toning solution is to be kept always in the dark, as light tends to decompose it. The process of toning should always be carried on in a room illuminated with yellow light. Replenish the bath from time to time with portions of another bath made in precisely the same way. If it begins to tone too slowly, a grain or two of the chloride of gold may be added. We regret that we cannot answer questions of this kind by post.

**B. M. F.**—It is a good thing to keep your thick "bottoms" of collodion, rather than use up too close. When a new thin sample is obtained, which gives weak, foggy images, a little carefully decanted from a bottle of "bottoms" is often a very valuable addition. We cannot recommend any especial maker in this column.

**LUX FIAT.**—Light unquestionably tends to decompose a fixing bath after it has been once used, and fixing should always take place in the dark, because the decomposition set up in the hyposulphite of silver formed in the print will almost certainly issue in fading.

**D. D. (BELGIAN SUBSCRIBER).**—The ammonia-nitrate of silver is excellent for plain paper, but we do not recommend it for albuminized paper, as it often involves various troubles, having an especial tendency to dissolve the albumen. The formula most commonly used consists in making a fifty-grain bath, and adding ammonia first until all the silver is precipitated as oxide, and then until it is re-dissolved. It is renovated by adding more of a bath made in a similar manner. We do not recommend boiling it; but the albumen may be removed by permanganate of potash. There is some possibility of the formation of fulminate of silver.

**EMPTY WRAPPER.**—An empty wrapper has been addressed to our office, handed to us by the postman marked "Found in the newspaper box without contents." It may have contained photographs, or documents, or a newspaper; but the absence of contents is not an accident, for it has manifestly been very roughly torn open to remove its contents. The word "Thames" is the only decipherable part of the post mark.

Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED.

Messrs E. DAY and SON, Bournemouth.

Two Photographs of Sir H. D. Wolff.

Mr. H. L. TILLY, Southsea.

Photograph of Reception of the Rifle Brigade at Portsmouth.  
Photograph of Reception of 42nd Highlanders at Portsmouth.

Mr. J. PORTER, Perth.

Two Photographs of Memorial to 42nd Highlanders in Dunkeld Cathedral.

Mr. W. COX, Nottingham.  
Photograph of C. Bradlaugh.

Mr. SLINGSBY, Lincoln.

Three Photographs of a Horse named "Glendore."



## The Photographic News, May 29, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

MR. THOMSON'S ILLUSTRATIONS OF CHINA.—THE FIRST DEPARTURES TO OBSERVE THE TRANSIT OF VENUS.—PRETSCH'S PHOTO-ENGRAVING PROCESS.—MECHANICAL PRINTS.

*Mr. Thomson's Illustrations of China.*—We are glad to hear that Her Majesty has been pleased to recognize the services of Mr. John Thomson, whose work, entitled "Illustrations of China and its People," has attracted her attention. Those who visited last year's photographic exhibition at Pall Mall no doubt remember the grand photographs of Mr. Thomson that ornamented the walls, and which, notwithstanding the unheard-of difficulties involved in their production, were masterpieces of photography. Their size was upwards of two feet, and there were representations of districts but seldom visited by Europeans. Pictures of such grand dimensions and genuine excellence would have been regarded as first-class productions had they represented views in the United Kingdom, instead of having been secured in one of the least travelled countries in the world. The Queen has marked her appreciation of Mr. Thomson's exertions by presenting him with a gold medal, and we heartily congratulate the happy recipient. One of the views that struck us very forcibly was the interior of Nankin Arsenal, showing a *mitrailleuse*, by the side of which were a mandarin and native workman. Another picture, not less striking, was a river scene, with vessels of all kinds moving on the water. They were certainly some of the most ambitious photographs we have ever seen.

*The First Departures to Observe the Transit of Venus.*—A move has already been made by the observers who are commissioned with the duty of observing optically and photographically the approaching transit of Venus. On Saturday last some of the officers who are to proceed to the Southern Hemisphere took their departure, carrying with them astronomical and photographic apparatus to the extent of one hundred and fifty tons. As it will probably take five or six months before some of the party arrive at their destination, the start has been made none too soon, and the vessel that carries them out (the "Elizabeth Martin") only takes them as far as Mauritius. It is the officers for the stations at Rodriguez, in the Indian Ocean, and Kerguelin's Land, about two hundred miles south and east of the Cape of Good Hope, that have sailed, among them being Lieut. Noate, R.E., Lieut. Corbett, C.B., and Mr. J. B. Smith; the latter is entrusted with the photographic duties, while the former will confine themselves to securing optical records. Some Sapper photographers from the Greenwich Photographic School accompany these gentlemen as assistants. There are to follow to these stations Father Perry, F.R.S., who is going to Christmas Harbour; and Mr. Burton, who will discharge photographic duties at Rodriguez. The scientific staff for New Zealand will start in a few days, and will consist of Major Palmer, R.E., and Lieut. Crawford, R.N., as astronomers, and Lieut. Darwin, R.E., as photographer. Captain Abney, R.E., and other officers whose destination is nearer home, will not take their departure for some time. Lord Lindsay's private expedition to the Mauritius is on the eve of starting. All the other scientific bodies but this one are under the direction of the Astronomer-Royal, Sir George Airy, K.C.B., and will carry out the regulations laid down by that gentleman.

*Pretsch's Photo-Engraving Process.*—It is not unlikely that some steps will be taken by the Vienna Photographic Society to continue the work begun by Paul Pretsch some time since, with regard to elaborating a practical method of photo-engraving by the etching of metal plates. Pretsch having now died, and his patent very nearly run

out, it is suggested that, as the invention rests upon a sound basis, it would be well to encourage, in some way, other photographers to take up the method, with a view to perfecting the same. The late president of the society suggests awarding a prize of some value to any one who shall most successfully elaborate Pretsch's photo-engraving process, the results which have already been produced by it demonstrating very clearly that it is capable of yielding thoroughly good work.

*Mechanical Prints.*—The production of mechanically printed photographs seems now to be carried on with great regularity, the demand for pictures of this kind increasing every day. In this country we have the Woodbury process, and the heliotype and Lichtdruck methods, pretty extensively worked; and in France there are MM. Goupil et Cie, of Paris, who occupy themselves with the Woodbury invention; and in Germany, Herr J. B. Obernetter, of Munich, who employs Lichtdruck, representing the principal photo-mechanical printers on the Continent. Between them, these two firms do a great deal of printing by mechanical means, MM. Goupil reproducing engravings and paintings in large numbers, while Herr Obernetter has vulgarized numberless cartoons of various artists. The latter, who may be regarded as the principal photo-collographic printer in Germany, charges at the rate of nine or ten shillings per hundred *carte-de-visite* photographs, supposing a few hundreds are required, or, in other words, half the amount for which the pictures could be printed in silver. The price for Woodburytype of the same size appears to be much lower, about four shillings per hundred being, if we mistake not, the price usually charged. Each process has its own class of negatives, which are more suitable than any other. For the photo-relief method a vigorous cliché, with soft milky high-lights—not with those of a glaring chalky nature—appears to furnish the best results, while in the collographic method there should be little vigour, and the shadows of a lighter and more graduated character. Thus the most successful portraits we have seen printed in Lichtdruck are those in which the costume worn has been of a light nature, and in which no heavy shadows were to be seen. Thus a man in a light suit of tweed and a grey wide-awake, or a West Indian planter in a puggree, would be very suitable subjects for the collotype process, which would most likely fail in depicting shadows upon black velvet, deep blacks being generally rendered too fuzzy and flat. In the reproduction of large sized engravings, it may be mentioned, the collotype process is without its equal.

### REMARKS ON THE ASSERTED INFLUENCE OF COLOURING MATTERS ON THE REDUCTION OF SILVER SALTS.

BY JOHN SPILLER, F.C.S.\*

It will be in the recollection of my hearers that Dr. Hermann Vogel announced last year that he had succeeded in rendering bromide of silver sensitive to the so-called chemically inactive rays. Operating upon dry bromide plates washed with coralline yellow and aniline green, the author states that whilst restraining the influence of the rays coinciding with the more refrangible part of the solar spectrum, the sensitized surface becomes directly affected by the luminous rays, and particularly by those situate in the yellow of the spectrum near the fixed lines D. Dr. Vogel infers from his experiments that he has thus afforded proof that the optical absorptive powers of the admixed substance play an important part in determining the sensibility of photographic plates, enabling them to record an impression within an area not previously supposed to be capable of true chemical activity.†

Such is the important result at which Dr. Vogel has

\* Read before the Photographic Society of London.

† See PHOTOGRAPHIC NEWS, Dec. 1. 61, 1873, p. 569.



arrived; and his deductions are at all times entitled to be received with the greatest consideration and respect; but they have already been subject to criticism in America, where Mr. Carey Lea, in describing his own experiments, does not hesitate to throw considerable doubt upon the reception of this provisional hypothesis. As a contribution towards the further discussion of this question, I beg leave to relate the particulars of some experiments recently made by myself, which tend to support the objections urged by Mr. Lea.

1. A bromide-of-silver emulsion plate was washed was water, and then coated with an aqueous solution of soluble aurine (coralline). The plate was allowed to dry, and then exposed to diffused daylight for twenty minutes under a double layer of ordinary non-actinic orange glass (such as I have often used in the windows of my collodion operating room, and which freely admits rays of the refrangibility of those in the neighbourhood of the fixed line D). A slip of wood was placed diagonally across the holder, so as to cast a shadow in the event of chemically active rays operating upon the plate. On treating with an iron developer there was no apparent difference observed, and *no image* shown upon the plate.

2. A similar experiment, made with a bromized plate washed with aniline green, and exposed under the same conditions, gave no image.

3. Another plate, treated with the aniline green, was thoroughly dried before exposure, with no different result. This time the exposure was prolonged for half an hour on a bright sunny afternoon, and the attempted development pushed to the point of staining the plate.

4. A sheet of sensitized chloride paper, having both ammonio-nitrate of silver and ammoniacal solution of aurine on its surface, was not found to be affected under the orange glass in the space of an hour. Having used upon several occasions an alcoholic solution of aurine mixed with shellac varnish as a perfectly successful adiacinic medium, it seems impossible to believe that the use of this coloured material should confer a special sensitiveness upon silver preparations placed beneath it without such effects having been previously observed in practice.

As yet I have had no opportunity of working with salicine in the new direction proposed by Mr. Carey Lea; but with regard to the main point at issue, I feel disposed to endorse the statement made by the eminent American author in the concluding paragraph of his paper (*British Journal*, March 13th, 1874, page 121):—"Whilst fully appreciating the interest which attaches to Dr. Vogel's investigation, and his reliability as a practical experimentalist, I cannot help concluding, from my own results, that there exists no law connecting the colour of a substance placed in contact with a sensitive body and the increased or diminished sensitiveness imparted to that body as respects particular rays of light."

The subject of the tinting of films has lately attracted much attention on the part of Mr. Henry Cooper, Mr. Russell Manners Gordon, and Col. H. Stuart Wortley, and a few other new observations, bearing upon the use of colouring materials on sensitive surfaces, have been elicited in the course of this inquiry; but the results are not yet sufficiently elaborated to enable me to include them in this communication.

## ON THE COLLODIO-CHLORIDE PROCESS.

BY GEORGE HOOPER.\*

It is nearly ten years since this society was put into possession of one of the most beautiful and perfect processes connected with our charming art. The principle of holding chloride of silver in suspension in collodion, and thus making a sensitive emulsion, was the invention of our esteemed and active member, Mr. Wharton Simpson. The process was given unfettered, caused

considerable excitement at the time, was frequently designated the chief discovery in the art in the year 1865, produced results that charmed all who saw them, had various applications, and yet has only proved a commercial success in the hands of a small minority. How this should happen is difficult to explain. Some consider that its permanency is doubtful; yet some prints on the table have been done for years, undergone no change whatever, and certainly, as regards permanency, the process will compare most favourably with anything produced upon an albumenized surface. Then others exclaim, "'Tis too troublesome; it is quite impracticable to work the process commercially;" and yet these very gentlemen have never set their brains to work to see whether it cannot be made less troublesome. Is a beautiful process to be condemned because prints have a tendency to roll up when toned? Others think the process slow; but this is a decided error, as it may be reckoned about three times as quick as printing upon ordinary albumenized paper. Others think it very difficult to get a certain tone they desire; but this is really a very easy matter, and quite as much under the control of the operator as the ordinary silver-paper process; and far greater brilliancy, richness, and roundness, or contrast, is obtainable, as well as the print being more upon the surface, and contained in a film of such a structureless nature as to add greatly to the general effect when finished.

All that has been said thus far alludes to the use of the collodio-chloride process upon paper; but when we consider its useful applications upon glass and various other substances, it is then we cannot praise it too highly. Whether for printing transparencies by contact printing for ornamental purposes upon opal glass, pot metal, ground glass, earthenware, &c., or for any transfer process, in all these directions the collodio-chloride process has unquestionable advantages, and only requires a fair trial to hold a most favourable position when compared with any other known process. But we will return to the discussion of the process upon paper. The cartes handed round for your inspection and criticism are printed upon Herr Obernetter's paper, kindly forwarded to me by Mr. George Bruce, of Dunse. They were my first trials upon this paper, only printed last week, and were toned and fixed in the same baths I use for my regular work; that is, an ordinary acetate of soda toning bath, strength thirty grains of acetate to one grain of gold, and fixed for five minutes in hyposulphite of soda of the usual strength—namely, one part soda to five or six parts water. The prints are first thoroughly washed in two or three waters, and then toned. Any desired tint is easily obtained; they go back very little in fixing, but when dried look more toned than whilst wet. They require several washings before being mounted, but not so much as albumenized prints; and I have found it best to cut the prints whilst still wet, and mount them in the damp state. Before leaving this part of the subject I would add that although the prints just referred to have been toned in an ordinary acetate of soda bath, yet I am informed by Mr. George Bruce and others that they would have been of a still better colour had I tried the sulphocyanide of ammonium bath; and I am convinced such is the case. The rolling up of the prints is certainly a drawback to the process, but not an insurmountable difficulty. The collodio-chloride paper of Herr Obernetter is very good and trustworthy, but has one fault, and that is, it prints too rapidly, or rather the shadows become bronzed before all the beauties of the negative are fully printed out. This is so much the case that an over-exposed and slightly veiled negative is really more suitable than one of good qualities. Greater contrast, brilliancy, richness, and roundness of effect are its favourable qualifications, as well as greater rapidity. I have also received a sample of collodio-chloride emulsion from Messrs. Mawson and Swan, of Newcastle, which is very excellent, though I think it might be made more

\* Read before the Photographic Society of London.



sensitive. In this (its original) form it is very useful, and with slight modifications in its composition might prove available for printing enlarged transparencies in the camera, and produce far more pleasing pictures than any other emulsion process. Perhaps some adept in the art will give it a fair trial, and report at a future meeting. For printing transparencies by contact the emulsion referred to is everything that can be desired. Some specimens on the table, kindly lent for the occasion, have been executed nearly ten years, and not undergone any change, although no particular care has been taken of them. This and many other testimonies all go to speak well of its permanence; and when we take all these advantages into due consideration, and remember that this is a process that has never been patiently and systematically worked out, is it not a question whether such should not be done, so that an easy, certain, and permanent process may be perfected?

Many useful and valuable hints were enunciated at the time of its discovery: and although I have been careful in this short paper to avoid going into the chemical composition of this emulsion, yet I may add that some experimentalists have found great advantages by using "carbonate of silver" instead of "chloride of silver," and others found advantage by adding citric acid in varying proportions. All these and many other suggestions of an important nature should be duly weighed, and, if practicable, aid in perfecting a process which could be used for printing direct in the camera, and with considerable rapidity. The collodio-chloride process upon glass, by development, has never received the attention it deserved at the hands of our clever experimentalists. In conclusion, I trust the few words written, and the prints handed round, will encourage some of our members to give the subject full investigation, and see whether a permanent process surpassing in beauty albumenized prints cannot be perfected, and ultimately become universally adopted, on account of its greater advantages, as well as its simplicity and rapidity of execution.

#### ON THE REPRODUCTION OF NEGATIVES BY THE POWDER PROCESS.\*

IN accordance with your request I have returned the two negatives you forwarded me, together with eight reproductions from the same. I have taken care not to retouch them in any way, so that you may see that all the defects in the original are shown in the reproductions.

The sensitive compound I have hitherto employed for coating the plates is made up of:—

Dextrine	...	...	4 grammes
Ordinary white sugar...	...	5	"
Bichromate of ammonia	...	2	"
Water	...	100	"
Glycerine according to the conditions of the atmosphere			
	...	2 to 8 drops	

I have just made an improvement in the process, however, by discovering a mixture to supersede the dextrine sugar solution which will keep good for years. I have forwarded you a bottle of this new mixture, as also a small flask of the collodion I employ for stripping the pictures; I also send some of the graphite employed by me, and a dusting brush. With these materials, I am convinced, a result will be obtained at the very first attempt.

A new, well cleaned, patent plate is coated with the sensitive chromium solution, and after the superfluous liquid has been allowed to flow off at one of the corners, the plate is dried in the dark by being placed upon a lithographic stone or metal plate, a period of ten minutes being sufficient for the purpose, with a temperature of 120° to 160° Fahr.

The film being perfectly dry, the plate, still warm, is put under a negative, and printed in the shade for ten or fifteen minutes. As soon as it comes out of the printing frame, the plate is again slightly warmed, the brush is dipped into the graphite, and applied over the surface of the image, which should be just slightly visible. The application of the powder is carried on in a shaded corner of an ordinary room illuminated by daylight. You must not press hardly upon the film, with the brush, but move the same over the surface as lightly as possible; nor will it do to hurry the operation.

In proportion as the film cools, so the image appears. By carefully breathing—or, better still, blowing—upon the film, you will be able to accelerate the process, and when the picture has attained sufficient vigour you brush off the superfluous graphite powder with a clean brush.

A normal collodion is now applied, such as I send, composed of:—

Alcohol	...	...	...	500 parts
Ether	...	...	...	500 "
Pyroxyline	...	...	...	15 to 20 parts

When this film has set and hardened, the margins are cut round with a knife, and the plate put into a porcelain dish of cold water. In three minutes the picture will be free from the glass; and the film may be employed in this position, or reversed with a soft brush, and taken out of the water, adhering either to the same glass plate or to another. A gentle stream of water falling upon the film will remove any chromium salts still remaining in the film, and will also press down the loose film uniformly upon the glass surface; finally, the plate is allowed to dry in a perpendicular position. Further treatment of the plate with varnish follows as a matter of course.

The image upon the collodion film is very thin; but you need be under no apprehension of its tearing whilst in the water, where it may be easily manipulated. I have to do with films of this kind measuring three feet square.

I shall be glad to know if the process finds favour with the Photographic Society of London, and trust that you, or some other member of the society, will make experiments with it.

#### THE PREPARATION OF DIFFRACTION GRATINGS.

BY LORD RAYLEIGH, F.R.S.\*

IN testing gratings I prefer to work in a dark room. The slit is fastened in the window-shutter, outside which is placed the heliostat or *porte-lumière*. As slits are frequently required in optical experiments, and, as usually made, are rather expensive, I may be allowed to mention a very simple method by which serviceable slits may often be obtained. A piece of glass is covered with tinfoil, which must be made to adhere well; I have found a weak shellac-varnish a suitable cement. The alcohol is allowed to evaporate, and the thin layer of shellac softened by heat. In order to make a slit, it is only necessary to lay a straightedge on the tinfoil and draw a line with a sharp knife, afterwards wiping the line of the cut with a rag moistened with alcohol. The width and regularity of the slit may be judged of by holding it close to the eye, and observing the appearance presented by a distant candle. The narrower the aperture, the more dilated (in the direction of the width of the slit) the image will appear. Broader slits may be made by removing the foil between two parallel cuts.

At a distance of twelve feet or more from the shutter are placed the grating and the object-glass of the observing telescope. In making the preliminary adjustments, it is convenient to use a slit so wide that the spectra and the light reflected from the grating can be seen on a screen. By the second, the aspect of the plane of the grating can

\* A communication from Herr J. B. Obernetter, of Munich, to Mr. H. Baden Pritchard, War Department, Woolwich.

\* Concluded from page 245.

be judged of; and when the line of spectra is horizontal, it will be known that the lines of the grating are vertical and parallel to the slit. As object-glass, I am in the habit of using a single lens of about twenty-four inches solar focus. The eye-piece is a high power achromatic, supplied by Mr. Browning, and forms, with the object-glass, a telescope of much higher magnifying power than is ordinarily used in spectroscopes. Without a high power it is impossible to bring out the full value of the grating. In order to obtain the best definition, it is necessary to adjust carefully the aspect of the object-glass; and I find that the best aspect is not always the same. It is possible that the performance of other optical instruments might occasionally be improved if means were provided for a slight alteration in the direction of the optic axis of one of the lenses employed. The grating itself I usually place approximately in the position of minimum deviation.

The copies on worked glass by the ordinary photographic processes, and by the modification of the collodion-chloride last described, rarely fail in definition. With the original (3,000) grating, or with the copies, I can make out nearly, but not quite, all that is shown in Angström's map. With this grating, the third spectrum is generally the most serviceable. When the picked patent plate is employed, there will generally be a proportion whose performance is less satisfactory, though few which would not give very fair results when tested by a low power only. Some cannot be considered inferior to the worked glass—at least when the object-glass is specially adjusted for them. In many cases the definition may be considerably improved by the use of a diaphragm in the form of a *horizontal* slit, so placed that only the central parts of the lines of the grating are operative. In respect of brilliancy, gratings may be more quickly judged of; it is sufficient merely to examine the spectra of a candle placed in a dark room.

The lines themselves are, of course, too close to be seen without a microscope; but their presence may be detected, and even the interval between them measured, without optical aid, by a method not depending on the production of spectra or requiring a knowledge of the wave-length of light. If two photographic copies containing the same number of lines to the inch be placed in contact, film to film, in such a manner that the lines are nearly parallel in the two gratings, a system of parallel bars develops itself, whose direction bisects the external angle between the directions of the original lines, and whose distance increases as the angle of inclination diminishes. The cause of the phenomenon will be readily understood by drawing on paper two sets of equally distant and not too thin bars inclined at a small angle. Where the opaque and transparent parts severally overlap, the obstruction of light is, on the average, less than the double of that due to each set separately,\* and, consequently, these places appear by comparison bright. The interval between the bars is evidently half the long diagonal of the rhombus formed by two pairs of consecutive lines, and is expressed by  $a \cos \frac{1}{2} \theta \div \sin \theta$ , or approximately  $a \div \theta$ , where  $a$  is the interval between the primary lines, and  $\theta$  the mutual inclination of the two sets.

When parallelism is very closely approached, the bars become irregular, in consequence of the imperfection of the ruling. This phenomenon might, perhaps, be made useful as a test.

If the planes of the films be not quite parallel, bars parallel to the original lines may appear when the line of intersection of the planes is in the same direction. This arises from a foreshortening of one of the sets, making it equivalent to a grating of a somewhat higher degree of fineness.

When examined under the microscope, the opaque bar on the copy, which corresponds to the shadow of the groove

of the original, is seen to be composite, being not unfrequently traversed along its length by several fine lines of transparency. In one case, where the copy was on common glass, this effect went so far that at certain parts of the grating the periodicity was altered by each line splitting into two, the first spectrum altogether disappearing. In order to make this observation, the eye should be placed at the point where the pure spectra are formed, and be focussed on the grating. The places in question will then appear as irregular dark bands.

The disappearance of the first spectrum is very unusual; but it is common for bands to appear when the eye is placed in the place of the fourth and higher spectra. When the order is high, the bands will not be black, but coloured with light belonging to one of the other spectra. There is no difficulty in understanding how this occurs. In the process of copying, the groove of the original is widened into a bar, whose width depends on the closeness of contact, an element which necessarily varies at different parts of the plate. The dark bands are the locus of points at which the relation of the alternate parts is such as to destroy the spectrum in question.

I have not had an opportunity of trying the method of copying on lines closer than 6,000 to the inch; but I have no doubt that the limit of fineness was not attained. I should expect to find no difficulty with lines 10,000 or 12,000 to the inch; but beyond that point it is possible that the method would fail, or require special precautions, such as the use of extra flat glass, and greater pressure to ensure close contact in the printing. For preliminary experiments I should be inclined to try mica as a support, whose flexibility would facilitate a close contact. I may mention that I have done copies of the 3,000-line grating on sheets of mica, which may be obtained very thin and smooth from the photographic dealers. For more convenient manipulation in the preliminary stages of preparation, the mica should be mounted on a sheet of glass of the same size as itself. A small drop of water interposed will ensure a sufficiently close adhesion.

I have tried to take copies of copies, but with indifferent success, even when the performance of the first was not perceptibly inferior to that of the original.

Gratings may be copied without the aid of photography by simply taking a *cast*. Following Brewster, I have obtained a fair result by allowing filtered gelatine to dry after being poured on the 3,000 Nobert. This method, however, is attended with much more risk to the original, and is, besides, open to other objections, sufficient, I think, to prevent its competing with photography.

## Recent Patents.

### TONING, FIXING, AND WASHING.

BY JAMES BECKETT.

THE following specification describes some mechanical contrivances to aid toning, fixing, and washing:—

"This my said invention has for its object an improved system of treating photographic prints immediately after being taken from the negative, so that the operations of 'washing,' 'toning,' 'fixing,' and 'washing' may be performed in a superior, expeditious, efficient, and economical manner, and be converted into a continuous process.

"These my improvements may be carried out by the use of (say) three small troughs having circular bottoms into which the 'toning,' 'fixing,' and 'washing' fluids are placed. These troughs are formed at their ends with suitable bearings to receive the axle of a small drum or cylinder, which is of a convenient diameter to work round in close proximity but not in contact with the bottom of the trough. The prints, when removed from the printing-frame, I first cut to the required size, and then spread them (picture surface outside) over the cylindrical surface of the revolving drum, where I secure them in position by means of elastic bands, or in

\* The mathematical reader will easily prove this from the law of absorption.



any other suitable way. The cylinder I then place on the bearings of the washing trough, and rotate it so as to bring the outer surface of the pictures in contact with the water, to remove the nitrate of silver from the prints. After having performed this operation and discharged the remaining water, I introduce toning solution into the trough, when I again rotate the cylinder until the prints are toned, after which I withdraw the remains of the toning solution from the trough. I then introduce several changes of fresh water to remove the toning solution from the surface of the prints, and afterwards remove the cylinder, with the prints thereon, to the hypo or fixing solution trough. I again rotate the cylinder so as to pass the surfaces of the prints through the fixing solution for a few minutes, and then remove the cylinder to the water trough to receive its final washing.

"In place of using the cylinder or cylinders for carrying the prints, as hereinbefore described, flat surface plates may be substituted, which plates I provide with india-rubber bands, or their mechanical equivalent, for securing the prints thereto, as before described, by which arrangement the dishes at present used by photographers may be utilized by being substituted for the round-bottom troughs described.

"This principle of surface dipping will be found in practice infinitely superior to the total immersion and saturation from both sides of the paper as at present practised, which is highly detrimental and injurious to the prints, and at the same time causes great waste of the expensive fluids used in the several operations.

"I prefer to form the troughs, cylinders, and flat plates of stoneware, porcelain, glass, or other vitreous material or materials; but wood, metal, or other substances may be used.

"In some cases I prefer to attach the upright bearings on which the cylinder rotates to a base-plate or stand, which is arranged to receive a loose trough having a concave internal or other suitably shaped bottom; and in most cases I prefer to construct the uprights with at least two bearings, so that the cylinder being placed on the upper pair of bearings, it will be above and free from contact with the liquid in the trough, which will be found convenient when the toning or other process is required to be suspended for a time, as will be well understood by all practical photographers.

"Having now fully ascertained and described the nature of this my said invention, and the best means I am acquainted with for carrying the same into practical effect, I wish it to be clearly understood that I do not confine myself to the precise detailed proportions or dimensions of the several parts of the apparatus hereinbefore described and set forth, as these, it will be seen, may be considerably varied without departing from the invention; but what I claim is,—

"1st. The improved system of treating photographic prints substantially in the manner and for the purposes hereinbefore fully described and set forth.

"And lastly, the general construction, form, and arrangement of the several parts of the apparatus, operated substantially as and for the purposes hereinbefore fully described and set forth."

## PREPARING PHOTOGRAPHS FOR COLOURING.

BY ROBERT FAULKNER.

This invention consists, in various modes, of giving a surface to photographs suitable for receiving colour, so as to produce a rich and transparent effect. The specification runs as follows:—

"The object of my invention is to obtain an artistic effect in photographs, whether taken direct, or enlargements, either on plain or albumenized paper, or carbon prints, portraits, landscapes, architectural designs, and other subjects, by obtaining by indentation on different parts of the picture surfaces more or less roughened or granulated, which can take tints with greater richness and variety than can be obtained on the usually smooth and uniform surface.

"One method of effecting this is as follows:—I place a sheet of emery, glass, or pumice paper, or paper otherwise roughened or granulated, or linen, in contact with the picture to be operated on, and subject them to pressure, either by passing them between rollers, or in any press of known construction.

"In effecting this process I prefer to lay the print or other subject with its back to the roughened surface, and on the face of the print to place blotting paper or other yielding material of like character, and then subject the whole to pressure. It is advantageous to damp the print in the first place, so that it more readily takes the impression of the indentations. If it is desirable that

certain portions of the picture should be protected from the roughening action, I either cut or scrape out these parts in the roughened paper, or I place pieces of thin smooth paper, or thin sheet india-rubber, gelatine, or collodion film (which is sometimes called collodion leather), goldbeaters' skin, or other suitable material, on those parts of the picture which are to be protected, and then apply the pressure; or when no part of the picture has been thus protected, the indentations made on any part may be afterwards obliterated by means of a burnisher. By this means the picture acquires a granulated surface which will take colour very readily. This colour may be merely a variety of the colour of the picture itself, or other tints may be used, according to the taste of the artist, either in chalk, water, or oil. For vignettes, particularly, this method gives the background a granulated surface, which can hold colour and present a perfectly stippled effect, and this effect can be heightened according to the taste and judgment of the artist and the requirements of the picture.

"This stippled effect can be varied according to the size and grain of the paper or other substance employed for producing it, and the pressure may be repeated several times if desired. The picture, when finished, may be rolled or pressed to give it smoothness.

"Another method is as follows:—I take fine emery or glass powder, or ground silex, pumice, or other similar powder, or filings of metal, and cover those parts of the picture which are required to be acted upon, and then I subject it to pressure, paper, cardboard, millboard, or sheet metal being placed over the picture before pressure is applied. After pressure the powder is dusted off, and colour can be applied to the granulated surface produced by its impression. In applying the powder very little care is necessary, because should the powder overlap any part not requiring granulation, no injury will result to the picture, the grain being rendered visible only when colour is applied to it; or instead of applying the powder to the face of the picture it may be dusted on the back thereof before the pressure is applied.

"Instead of dusting on the powder it may be made into a paste and laid with the brush over the parts of the picture to be acted upon, and when dry the pressure is applied. By this mode of procedure the surface can be prepared well when powerful effects are desired, and often it is desirable to mix colouring matter with this paste.

"The paste may be made with water, alcohol, ether, benzole or any liquid which will not injure the photograph; but no gummy or otherwise adhesive substance should be used, otherwise the powder could not be removed after the pressure has been applied.

"For some effects it is desirable that the powder should remain on the surface. In such cases I serve the picture with a solution of gelatine or other adhesive substance, and while this is moist I sift the powder over it. When dry the superfluous dust is shaken off. This process is peculiarly applicable to carbon prints when just developed.

"When it is desirable to have a surface presenting greater regularity or a lined effect, engraved plates or rollers, such as are employed for embossing fabrics, may be employed for pressing the picture, and the colour can then be applied to such parts of the lined surface as may be desired. In this case also the parts where a lined effect is not desired may be protected by pieces of thin sheet or film before pressure.

"It will be evident that my before-described invention may also be applied with advantage for preparing the surfaces of water-colour drawings for receiving tints.

"Photographs or prints prepared as above described are thus rendered fit for the reception particularly of dry colours, such as chalks, crayons, pastiles, and the like, or pigments applied in the powdered form. For backgrounds of photographs a mineral grey, either in powder or made up into crayon, will be found especially suitable. When the colour is darker than desirable it may be lightened by rubbing with bread, glass paper, or ink eraser. After colours or shades have been applied the surface may be again indented as above described, either for the purpose of heightening the effect of the tints already applied, or in order to render it susceptible of farther tinting or shading.

"Having thus described the nature of my invention, and the manner in which the same is to be performed, I would have it understood that I make no claim for the production of roughened paper generally on which drawings are to be made; but I claim the methods substantially as herein described of roughening by indentation those parts of the surfaces of photographs and other prints on smooth paper to which it is desired to apply colour or shading."



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## YELLOW SPOTS ON PRINTS.

ALL the causes of minute yellow spots in prints have not yet been determined with certainty; but a large number of the sources of this prevalent defect have been traced home with tolerable precision. As an unusual number of complaints of trouble in this direction have come under our attention recently, and in mentioning one or two of the most recently suggested origins of spots, we shall add a very brief resumé of other prevalent causes.

It is scarcely necessary to mention the common source of this trouble, from which careless or inexperienced printers most frequently suffer—imperfect fixation. Fresh hyposulphite solution, not too weak; a temperature of 60° Fahrenheit; and constant moving of the prints, to prevent them from sticking together, are indispensable conditions in fixing; and the absence of any of them always produces risk of imperfect fixation, from which must proceed yellowness generally, and patches or spots of dirty yellowish-brown mottling and defacing the print. Care must be taken that minute air bubbles do not form on the print during fixing, or small yellow spots of imperfect fixation must follow. Thorough washing is, of course, necessary, and clean vessels in which to perform the washing are, of course, well understood conditions of clean and permanent prints. It is rather to the more occult, or unexpected, or unknown, sources of spots to which we here direct a few moments' attention.

One of the most puzzling cases of these minute yellow spots, which deface the print and drive the photographer distracted, came under our attention some time ago. It occurred in the hands of a provincial portraitist, and continued for several months. Every possible or suggested cause was carefully submitted to test, without any result. The gentleman in question, one of the most able, precise, and fastidious amongst high-class photographers, came up to town to consult experts amongst theorists and experienced practitioners alike without result; and at last, when verging upon acute mania, a happy inspiration, or a happy suggestion—we forget which—pointed to the coke fire burnt in the printing room, which might give rise to floating sulphurous particles in the atmosphere. The coke fire was at once banished, and with it disappeared the spots of the character which Lady Macbeth so emphatically objugates.

Another case, of equally obstinate character, more recently came under our attention. Again a careful provincial portraitist was the victim, and every possible source was examined with minute care. After a careful consideration of all the conditions brought under our attention, we came to the conclusion that the probable cause was the dust of hyposulphite of soda in the printing room, and

the latest advice confirmed this conjecture. The cause in question is, we are satisfied, a prolific source of annoyance. Small crystals of hyposulphite are dropped and crushed under foot. Portions of hyposulphite solution are spilled and dried up, and the particles remain on the ground. Even drops of hyposulphite solution falling upon the ground, as the prints are lifted from the fixing bath into the washing dishes, eventually leave traces of the dry salt upon the floor. This in hot weather flies about as dust, either when swept up or when trod upon, and these particles of dust, coming into contact with sensitive paper and with prints, become the sources of countless defects and unnumbered troubles apparently without origin.

The action of the bronze powder used for printing upon the mounting cards has been very distinctly traced, and we have repeatedly pointed it out as a sure and fertile source of yellow spots; but, despite warning, we see that it is still most extensively used. In one case, a jar of chloride of lime open in the printing room was found the cause of spots. In another a few crystals of citric acid crushed under foot, and pervading the atmosphere as dust, caused much trouble during many days. The use of liver of sulphur for reducing the silver in the hyposulphite solution has been found similarly troublesome. Mr. Bovey pointed out that particles of oxide of iron hanging about iron developed negatives was a not unfrequent cause of spots on prints. Common cards, acid paste and gum, and other obvious causes need scarcely be mentioned. At a recent meeting of the French Photographic Society a case was mentioned in which the mounting cards were suspected as the cause of spots; but the same batch of prints and the same cards, taken to another photographer's establishment to mount, gave no such defects, and the defect was eventually traced to excessive moisture in the original photographer's printing room, causing a fungoid growth on the albumenized surface. Packing prints in heaps when only partially dried has been found, in warm weather, to give rise to similar spots from a similar cause. There can be no doubt that occasionally defects in the original paper, or in the albumenized surface, are the origin of spots on the print; but photographers are, as a rule, only too ready to attribute such spots to defects in the paper, whilst, in truth, they are, in many cases, due to preventable causes within their own control. A cause hitherto unfamiliar has recently been pointed out by Mr. Anthony, in the *Photographic Bulletin*, which may be worthy of notice. He says:—"Having had occasion recently to inspect some prints that were covered with minute yellow spots, we discovered that each spot marked the place of a small bubble. Whether these bubbles occurred, as they generally do, from the action of the washing water, or whether they were in the paper before it was silvered, could not be determined; but their appearance indicated the possibility of their having occurred in the albumenizing of the paper. Persons accustomed to albumenizing are aware that a fermentation frequently takes place in prepared albumen, which is indicated by the formation of a profusion of minute bubbles. These are sometimes so minute that they are scarcely perceptible. Is it not possible that the yellow spots so often complained of may owe their origin to this condition of the albumen?"

The cause in question appears to be a very probable one in many cases, but in by far the greater majority the trouble rests with causes really under the control of the photographer, the remedy consisting in special cleanliness of atmosphere, water, dishes, fingers, and everything which can come into contact with the delicate and sensitive surface of the print during its various stages of production.

## WESTON'S PATENT ROTARY BURNISHER.

SOME months ago we called the attention of our readers to an important novelty in the finishing of photographs, whereby a degree of perfection of surface was obtained



beyond all comparison more beautiful than any we had seen produced before. This admirable result was produced by a process of burnishing in place of the ordinary rolling pressure which it had been the custom to apply. This valuable and successful modification of the ordinary method of securing a fine surface was due to Mr. Weston, an amateur photographer in the United States, to whose fecund ingenuity in invention the Patent Office in the States, we understand, bears frequent witness. The manufacturer of the burnisher—Mr. J. P. Bass, Mayor of Bangor, Maine—has recently visited this county, and to him we were indebted for various interesting details as to Mr. Weston's invention, and the sight of some very admirable examples of photography by high-class photographers in America, amongst which were some of especial interest and excellence by Mr. Weston himself.

A more extended knowledge of the burnisher, and examination of its results more than confirm our first impressions. It is difficult by merely verbal description to convey an accurate idea of the precise nature and extent of the superiority of the result obtained as compared with rolling pressure merely, a personal examination being necessary to perfect appreciation of the actual gain. A brief consideration of the facts will, however, enable our readers to understand the character of the result obtained. It is not merely polish, or glitter, which, as such, would be an absolutely bad quality in a pictorial surface. It is absolute evenness, the perfection of smoothness, in texture and surface, with such high polish as belongs to a perfectly even and smooth surface. A most glittering surface might be given to an impressed print by varnishing it; but the effect would be vulgar and displeasing. The surface of highly albumenized paper is very bright, but is not smooth and even: it consists of multitudes of little hills and valleys, and the albumen varnish only produces glitter, not a really fine surface. Rolling improves this somewhat by crushing down the little inequalities of surface. But what rolling pressure does to some extent, burnishing does perfectly. This will be apparent on a moment's thought. If the reader will press with his thumb-nail up an unrolled print with all the force he can apply, he will find that he makes but little impression upon the surface; but if, instead of merely pressing, he move his thumb with burnishing pressure, the effect will soon become apparent: and it is this effect which, in an enormously intensified degree, is gained by the burnisher beyond that obtained by ordinary rolling pressure without friction.

The result, should however, be seen in order to appreciate it. Every photographer knows the beauty which a print possesses whilst in the water, before it has been dried, and every photographer has mourned the disappearance of that bloom as the print has dried, the transparent shadows, with minute detail, often becoming a dull, opaque mass, without detail at all. One peculiarity of the burnishing is, that it seems to restore the effect which the print had whilst in the water, and which it lost when dry. It also brings out minute detail admirably, and gives to prints from a good untouched negative, the peculiar modelling and finish seen in prints from a skilfully retouched negative. Some prints of an old coal-heaver, sent to us by Mr. Weston, from what he terms a "raw" negative—the term admirably describes an uncooked, unsophisticated, untouched negative—have all the fine texture of the most perfect retouching. Of course it is in the negative, and when good detail is in the negative no touching can surpass it; but even when in the negative, it is, alas, often unseen in the print, until enamelling, rolling, or, best of all, burnishing, bring all out in the print which exists in the negative. All metropolitan photographers can easily judge for themselves, as Mr. Rouch, who has become agent for London, has one of the burnishers fitted up for use, and will be happy to show its working and result to all interested.

## FRENCH CORRESPONDENCE.

### PHOTOGRAPHIC POISONS AND THEIR REMEDIES—PHOTOGRAPHIC EXHIBITION.

ON more than one occasion the photographic journals have recorded accidents, more or less grave, resulting from poison, fire, explosions, &c., which have taken place in the studios of photographers. All who know anything of photographic matters are aware that those who follow the profession are often attacked by affections contracted in their daily work; the greater part of those who occupy themselves with the art are compelled to live in an atmosphere impregnated with noxious vapours, and to work with chemicals capable of exerting a baneful influence upon their health. Many of my colleagues, and I myself, have repeatedly addressed our readers on the subject of precautions to be taken, and whenever it has been possible we have made known the means of combating the dangerous influences in question. A medical man, who is connected with a great many operating photographers, and who is consequently in a position to furnish much valuable advice, has now come forward to aid us after an experience of several years. Dr. Henri Napias, the medical attendant of the Photographique Benevolent Society of France, has just sent me, for insertion in my journal, a communication entitled "Remarks upon the General Health of Photographers," and I do not think that a few extracts from this document will be unwelcome to your readers.

The first point upon which the author insists most energetically is to the effect that those who live in an atmosphere charged with ethereal vapour should restrict to a minimum the use of alcoholic drinks. Any alcohol absorbed increases the action of the ether that is breathed, and thus injurious effects are brought about which would not otherwise have existed. Walking in the open air is one of the best means of throwing out the ether from one's system, and the taking of seltzer or soda water, or lemonade, or other acid drink, assists also in neutralising its effect. Instead of taking vermouth, or especially absinthe, it is much better to drink, before breakfast or before supper, a small glass of quinine wine, which will have the double effect of neutralising, in some degree, the effects of the ethereal vapour, and improving the appetite and favouring digestion. In any case, when a photographer suffers much from headache—a malady, unfortunately, rather prevalent—it is recommended that a few drops of ammonia and a few drops of vinegar dropped into a glass of sugar and water, be taken.

Among the chemical products which photographers so often employ, the most dangerous are certainly cyanide of potassium, nitrate of silver, bichromate of potash, and the bichloride of mercury. Dr. Napias desires photographers to renounce altogether the employment of cyanide of potassium as a fixing agent, and especially as a means of removing stains of silver from the hands. Photographic operators who have to do with this dangerous substance often have their hands chapped during the winter, and they are then, of course, very liable to be poisoned, if not actually killed, by the application of this virulent compound.

The first symptoms of poisoning, either by the absorption of cyanide through the skin, or taking it inwardly, are pains in the heart and head, a feeling of numbness and sleepiness, and a painful difficulty in breathing, which becomes irregular and interrupted by profound sighs. If the poisoning is in a strong degree, and has penetrated the system through the stomach, the mouth is bitter, the throat and palate are burning, sickness and diarrhoea set in, together with abundant salivation; the pulse becomes insensible, the eyesight is troubled, the pupils dilate, and the eyes appear to grow bigger, while the body is bathed in a cold perspiration. In serious cases a general prostration is manifested, interrupted by convulsions; paralysis succeeds, and death takes place in a syncope.



All these phenomena succeed each other so rapidly that there is scarcely time to observe them and cope with them. In the case of a cure, the bad effects of the poisoning continue for some time, and the patient suffers long from nervous respiration, &c., and sometimes even is smitten with paralysis of certain muscles. As soon as any ill effects are observed from poisoning with cyanide, the wound should in the first place be washed with water saturated with chlorine at the ordinary temperature, and the patient should take two or three grammes of the same upon a lump of sugar. He should be put to bed, well covered up, and hot water bottles placed at his feet and along the body; then the apartment should be freely opened, for fresh air is indispensable under the circumstances. As soon as possible the patient should have a cup of tea or coffee with ten drops of laudanum and one or two dessert spoonfuls of rum or brandy, but on no account kirschwasser. A drink of this kind is administered three or four times at an interval of a quarter or half an hour. If the symptoms continue to be of a grave nature, besides the treatment above indicated, the patient should frequently be allowed to breathe chlorine water, and every five minutes he should be given a teaspoonful of the following compound:—

Chlorine water ... ..	5 grammes
Chlorhydrate of ammonia ...	2    "
Water sweetened with sugar ...	250   "

As soon as the patient shows signs of rallying, the laudanum in the tea may be dispensed with, and the drink is given every half hour instead of every quarter. If no chlorine water should be at hand, the patient should be permitted to breathe ammonia vapour, and fifteen or twenty drops of ammonia liquid should be administered in a glass of sweetened water. Dr. Napas thinks that in all studios there should be a supply of chlorine water and laudanum.

Nitrate of silver, which attacks and blackens the cuticle, is not really dangerous, except in the event of its being swallowed. In this case chloride of sodium, or common salt, is an excellent remedy. A glass of water containing a good pinch of salt in solution will act as a capital antidote.

Bichromate of potash, the use of which is becoming every day more general, has also its dangers. It brings out an eruption upon the skin which may lead to the formation of pustules, or even ulcers, which are very difficult indeed of removal. The fine powder from this salt, mixed with the atmospheric air, and breathed by workmen, brings about a chronic cold in the head, and leads to a fistula attack of the nostrils, which eats away the diaphragm in the nose. Such an accident is, of course, only to be feared in the case of those occupied in the manufacture of this salt. With photographers the harm would, doubtless, never go beyond a chronic cold and inflammation of the eyes; and such things as these may be avoided by washing thoroughly the hands, face, eyes, mouth, and nostrils, every time one has been working with bichromate of potash.

Taken inwardly, this salt acts like a virulent poison, and, in the event of anyone swallowing it, the arrival of a doctor should not be waited for, but a dose of lime-water mixed with milk or albumen should be at once administered. At the same time the arms and legs of the patient are well rubbed with a mixture of five grammes of ammonia and one hundred grammes of alcohol.

Bichloride of mercury, placed in contact with a healthy skin, produces abnormal salivation, and swelling and ulceration of the gums. If the cuticle happens to be broken, a sort of local gangrene is produced. In both these cases chlorate of potash, dissolved in lotions, should be placed to the wound; or, in the case of the throat, a solution should be gargled. If this poisonous substance has been swallowed, then the white of an egg, put into sugared water or milk, must be administered. Iron filings or zinc filings in honey may also be taken.

The Photographic Exhibition organised by the French Photographic Society has just been opened at the Palais de l'Industrie. It is the first since the war, and it is also unquestionably the most interesting that the public have yet had the opportunity of visiting. So far as we ourselves are concerned, we visited the gathering with very great pleasure. The collection of pictures clearly demonstrates how actively everyone has set to work after the misfortunes that overtook this unfortunate country a few years ago, and how quickly they have again taken up the march of progress. Everything in the exhibition is worthy to be examined: there are new processes, ingenious improvements, and clever applications of the art to be seen. Without entering to-day into a detailed examination of what can be seen in the galleries, I may mention that the methods of helio-engraving, photo-lithography, and mechanical prints in greasy ink are represented in a marvellous manner by MM. Rousselon, (MM. Goupil et Cie), Geymet, Thiel and, &c. There are some fine enlargements obtained by the new method of M. Lambert, and M. Leon Vidal has sent some views from nature, reproductions of paintings and polychromic portraits, which show the practical progress which the method has made during the past four months, and which leaves no doubt of the future reserved to it. Finally, among that which might be termed fancy work, deserves to be mentioned the portraits executed by M. Puttemans, by means of his so-called Neoleo-painting, of which I spoke in one of my recent letters, and thanks to which all photographers may nowadays pass for artists in oil painting.

It is to be regretted that the photographers from England are so few at the present exhibition, but it must be conceded that those who are present have maintained their position in the foremost rank. ERNEST LACAN.

## AMERICAN CORRESPONDENCE.

### PERMANENT SENSITIVE PAPER

*Permanent Sensitive Paper.*—Photographers have not ceased to search for this great desideratum. At a meeting of the Boston Photographic Association, which I attended a short time ago, Mr. C. F. Richardson exhibited some very rich and brilliant prints, which he had made by a method of his own on paper which had been sensitized for some days; but as he gave his formula and remarks in the form of a paper, I add them here in order that your readers may have the full benefit of them:—

"This subject has been much discussed for the past two or three years, from which its importance may be inferred. But the advantages of a paper which will remain sensitive and white for some weeks before printing, and for some days between printing and toning, are too evident to need a recital. I think it is generally admitted that no process has yet been published by which results equal to those on fresh paper can be obtained; and before giving my method of working, I will briefly review some of those which have been published, and state some of the objections to them. Some of these objections I have learned from actual trial, and others from the published statements of others.

"One of the first methods proposed was by the addition of citric, tartaric, or oxalic acid to the sensitizing solution. Citric acid appears to be the most powerful agent for the purpose. But although paper prepared in this way preserves its whiteness for a long time, I am convinced by numerous trials that as good prints cannot be made on it as by the usual process. The prints, whether the paper be fumed or not, are of an unpleasant foxy red, and although they can be toned to dark tints, they have a peculiar mealy colour, difficult to describe, and as difficult to like.

"Another method consisted in partially washing away the free nitrate of silver after sensitizing, and supplying its place by submitting the paper to strong fuming during the printing. But besides the inconveniences of this, it was admitted by many of those who advocated this method that there were difficulties in the way of producing first-class prints, and the process has certainly never come into general use.

"About a year ago Mr. Hopkins republished a process which had been proposed some years previously, and which consisted in



packing the paper, when nearly dry, between sheets of blotting paper which had been previously soaked in a solution of carbonate of soda and dried. This preserves the paper white for a considerable time, some which I have under trial being two months old, with slight discolouration, but on the second day after sensitizing the prints were flat and poor.

"On the 3rd of May, 1872, Mr. J. M. Turnbull published in the PHOTOGRAPHIC NEWS a method which consisted in floating the paper, when partially dry, on a bath of citric acid. I tried this, and although I did not succeed with it, the prints seeming to need more silver, you will see that I am indebted to Mr. Turnbull for a valuable hint.

"Two evils result from keeping ordinary sensitive paper, which appear to be independent in their nature, although springing from the same cause, viz., the combination of the free nitrate of silver with the sizing of the paper: first, the paper discolours; second, it prints flat and mealy. In any successful keeping process, it is necessary to overcome both these defects, and although there are many ways of preserving the colour of the paper, it does not seem so easy to maintain vigour.

"The process which I shall now give you is no longer experimental, but one by which I have done all my printing for a year and a half, and which two others have used from four to six months with success. Some members now in the room have also tried samples of the paper, and can speak as to the results.

"Supposing that you are using a 40-grain bath, slightly alkaline, prepare the following, which we will call No. 2:—

Nitrate of silver ... ..	1 ounce
Nitrate of ammonia ... ..	1 ..
Loaf sugar ... ..	32 grains
Citric acid .. ...	160 ..
C. P. nitric acid ... ..	½ drop
Water ... ..	16 ounces

Filter, and place in a tray beside your usual bath, which we will call No. 1. Float your paper from two to three minutes on No. 1, drain well, and place directly on No. 2. Leave it until a second sheet is ready to remove from No. 1; then hang the first up to dry. Proceed in the same manner till you have sufficient to last a week or more. When dry, smooth it out face downwards on a sheet of tissue-paper, and roll it back inwards, and in half an hour it will lay flat in your drawer.

"This paper will now keep two or three weeks in cool weather, and when required for use is fumed with strong ammonia for one hour. After fuming it will not keep so long, but may be relied on for a week at least. Print about the usual depth, and the prints will keep white before toning as long as the fumed paper.

"The paper, being acid, would fail to tone in most baths without some preparation for it; therefore, add to the first water in which the prints are washed before toning saturated solution of bicarbonate of soda, at the rate of about an ounce to a third of a peilful of water. Leave them in this for ten minutes; then give them one or two changes of simple water, and tone and fix as usual, taking care not to overtone. I use the acetate of soda bath, but I have no doubt any good bath will work equally well. I have used different brands of paper with essentially the same results. Should you wish to tone quicker, use more soda.

"Like most acid sensitizing solutions, No. 2 discolours after a time, when it may be necessary to use kaolin to decolourize it. As the sheet is wet when laid on No. 2, but little of this is used up, making the process an economical one. No. 2 improves greatly with use.

"Should a slight scummy deposit show on the paper when dry, it may be disregarded, as it dissolves in the fixing bath; but it may be entirely prevented by the addition of a few drops of nitric acid to No. 2. This deposit is citrate of silver, formed by the alkaline action of the first bath with the citric acid of the second. The amount of nitric acid given in the formula will probably entirely prevent its formation unless No. 1 is too alkaline. As the acid in No. 2 is being constantly neutralized by the alkaline solution on the paper, a few grains of citric acid should be added occasionally if the paper does not keep sufficiently well.

"This paper still did not keep as well as I wished, and it occurred to me that a combination of this method with the carbonate of soda paper might be an improvement. I accordingly packed some in that paper, and I have here a print made on Tuesday, March 31st, from a sheet which bears date February 18th, and was therefore six weeks old. It works as well as if only a week old, and shows as yet no sign of discolouring. This was so

satisfactory that I have for some time practised this addition using common heavy printing paper for the soda.

"Although I cannot, of course, say that there is no other successful method of keeping paper, yet I think a careful consideration of the manipulation employed will show good chemical reasons for the success of this process. When a sheet of salted paper is floated on a solution of nitrate of silver, it is well known that the character of the chloride of silver formed differs greatly, according as the solution is alkaline or acid, and considered independently from the condition of the soluble silver remaining upon the paper. This is also seen in the collodion process, for if a plate be excited in an alkaline bath, which is afterwards washed away, and the plate developed in the usual manner, it will show the effect of the alkaline bath by fogging. On the contrary, a plate may be excited in an acid solution, covered with an alkaline preservative, and afterwards developed with perfect clearness.

"We all remember the change in the character of our albumen prints upon the introduction of the alkaline silver solution and ammonia fuming, the strength of silver and time of floating being greatly reduced. Paper floated upon an alkaline solution furnishes the chloride of silver in the best condition for printing, both as regards sensitiveness and vigour, but also, and by virtue of these qualities, it discolours and spoils sooner. If the free nitrate of silver be entirely washed away from such a paper, it will keep some time, but at the expense of both sensibility and vigour. I therefore come to the conclusion that in the method which I propose the chloride of silver retains the peculiar properties conferred by an alkaline formation, while the acid of the second solution prevents the free nitrate from acting on the sizing of the paper to its discolouration, and also forms a small quantity of citrate of silver, which still further helps in the production of a vigorous print. The only purpose of the nitrate of silver in the second bath is to retain a sufficient amount upon the paper to produce a vigorous impression.

"Although I cannot claim to have completely exhausted the subject, the above theory is sustained by the fact that I have so far been unable, although I have made many trials to that end, to combine the ingredients of these two solutions, or the solutions themselves, in one bath that would produce the same results. I hope this process may receive a fair trial at your hands, as I am confident that you may by its use secure all the advantages of a practically permanent sensitized paper, without the sacrifice of any quality of good printing."

EDWARD L. WILSON.

## ON THE INFLUENCE OF COLOURED BODIES ON THE ACTIVITY OF DIFFERENT RAYS.

BY PROF. H. VOGEL.

I FIND in the *British Journal*, May 15th, an answer to my notice, in the issue of March 27th, page 154, of the PHOTOGRAPHIC NEWS, in relation to the action of colours on the sensitiveness of silver salts. I made the objection to Mr. Lea's experiments that he did not work with a true spectrum (*i. e.*, with pure colours), but only with the impure colours of glass strips or pigmented varnishes. I gave striking instances that the action of such artificial colours is, in many cases, quite different from the action of the pure colours of the spectrum, and that, therefore, Mr. Lea's experiments with impure colours neither contradict nor confirm any of the facts I have observed with the pure colours of the spectrum.

Mr. Lea now contends that I, in one case, employed a coloured glass strip (a yellow one). That is so: I used in a single experiment such a glass strip, but not for proving the action of pure colours, but for quite a different purpose; and I have not deduced from this experiment with impure colours conclusions on the action of pure colours, as Mr. Lea does. Working with impure colours in spectrographical researches is exactly of the same effect as working with impure chemicals in a chemical analysis. That is an assertion I need not prove to any who have worked with the spectrum.

I was not less surprised by a remark Mr. Lea makes to defend his experiments. He says: "Moreover, in a considerable number of cases any possible objection of the kind was obviated by the use of the same pigment to



colour the glass as to mix with the silver bromide. Well, mix, for instance, red coralline (which absorbs the yellow rays) with bromide of silver, and you will observe a strong impression of the yellow rays in the spectrum; but now expose the same coloured bromide under a glass strip coloured with the same pigment, and the result is easy to foretell: the yellow rays are absorbed by the glass strip before they could reach the bromide of silver; and certainly you cannot get the action of yellow rays on the bromide, because there are no more yellow rays in the light, which have passed through the glass strip. If Mr. Lea cut off in this manner the coloured rays, wholly or partially, which, according to my observations, act on the same coloured bromide, he can, indeed, never observe this action.

In the Proceedings of Societies, p. 237 of the NEWS, I read, also, some remarks from Messrs. Spiller and Stillman, who worked with coloured films, but without the success I have had. I am not astonished at this fact. In my first experiments in this direction I had no success; but I continued, because I was convinced that my theory of the matter must be true, and that I needed only to find out the practical conditions under which the principles work. If Mr. Spiller would publish his *modus operandi*, I could easily find out the reason of his non-success. The practical conditions of success will be published in *Poggendorff's Annalen*.

### PHOTOGRAPHY IN BOHEMIA.

BY G. STEAUBE.

ONCE more, after an absence of more than twenty years, have I again visited Germany and Austria, and settled down for a time in the old historical and beautiful city of Prag, in Bohemia. But the old love for the art of photography is still so strong as not to be able to resist the longing to see the various photographic places, to scrape up acquaintances, and have a chat on various subjects.

I have been struck by the beauty of portraiture throughout Germany, and suffered no disappointment after what I had been used to, and left now behind me, in old England. Splendid works of art did I see in Hamburg, Berlin, Dresden, Vienna, &c., and I am bound to express my opinion that, on the whole, the art of photography here has attained a higher standard of excellence than I have found in old England. It would do many photographers and amateurs a great deal of good if they would take a trip to the Continent, which, owing to the remarkably low price by railways and steamers, is not expensive for travelling, and, from the beauty of scenery, and what is to be seen in photography, would greatly increase their stock of knowledge.

I had the pleasure of calling upon many of the first-class photographers at the various cities through which I passed, and am pleased to be able to state that in every instance I received a hearty welcome, and all the information I required, so far as was possible, was gladly given me. What struck me most was the freedom from selfishness, secrecy, or exclusive police. Here at Prag I have made the acquaintance of most all photographers, but especially that of Herr Heinrich Eckers, a hard-working man, whose name has a good repute through Germany and Austria as one who labours, for the love of art, to explore the hidden riches of this beautiful art; and numerous are the prizes, medals, and testimonials in acknowledgment of his talents. Not only is his work very good in portraiture, but also in the taking of landscapes. And I may also mention here that he is the only one in the city of the Protestant faith, and, in spite of that, has almost all the work in the cloisters and nunneries to do. I have been so fortunate as to accompany him to a few of these, and I will, at some other time, write a chapter about photography amongst monks and nuns, if your readers would like to

know something about these fair creatures. But I enter now upon nothing but gossip, which is not in accordance with your valuable paper.

I will, before I close, say but a few words more about Herr H. Ecker, which, by right, should have been said at first: that he is one of the pioneers in the field of photolithography and photo-collography, and works a process entirely his own with great success. It much resembles the Albert-type, and is very simple. A proof of his process being good is shown by Herr Albert coming here last year to pay Herr Ecker a visit, and express his delight. As Herr H. Ecker makes no secret of his process, and feels a delight for others to profit by it, he requested me, if I would take the trouble, to make known to the world all his various processes, an offer of which I will avail myself, so far as may be possible for me to do. But I would draw your readers' attention to a book at present in the exhibition at Kensington. It is a reproduction, by photo-lithography, of an old valuable Latin Codex, by H. Ecker. This same volume was last summer at the exhibition at Vienna, and gained him the exhibition prize, and also, from the Emperor of Austria, the Cross of Merit (Verdens Krentz). This reproduction is so very good, and in all its details so sharp, that it is to be regretted that the paper had not been toned to give it the appearance of age, when it would have been difficult to decide between original and copy. The original is of the fourteenth century, and, of course, written. It is highly valued and praised, and is one of the best manuscripts amongst the treasures of the St. Veit Cathedral at Prag.

Should ever any of your readers be willing to come to Prag, I should be most happy, for old England's sake, to make him welcome, and show him our lions. But more in my next.

### ON SENTIVENESS.\*

ON the first glance at this heading some of my readers may be in doubt as to what it refers; and so, to prevent misunderstandings, I may as well state that nothing personal is meant by it, although many of our artist brethren possess very often a degree of sensitiveness for praise or blame which I should like to see transferred to thin collodions. But of this over-sensitiveness on their part I do not desire to speak just now.

Occasionally we have a collodion praised as something extraordinarily good, which, if tested by several photographers practically, is the subject of different verdicts. One is enthusiastic over its properties, another is cold, and the third gives no opinion one way or another. Contradictory judgments of this kind may result even when the exalted collodion really possesses good qualities. I myself once received a good sample of collodion which I shared with a colleague, and this gentleman did not by any means agree with me in the super-excellence of the compound. "It is good enough," he said, "but my own formula yields a material quite as sensitive." On examining into the matter I found that he was not altogether wrong in his view. The manipulation of different operators varies a great deal. Many are in the habit of exposing for but a few seconds in portraiture photography, whilst others again, even with a good light, give a period of from twenty to thirty seconds. To the latter class belonged my friend, and he proved to me that, with his mode of working, the collodion I had given him did not act any more quickly than that prepared by himself. We then exchanged collodions, and I tried his material, giving short exposures, as was my wont, and then I found that his collodion was considerably behind the newer product. To find out where the fault existed, I made a few pictures with different exposures with the two preparations, and then I discovered that, in fact, my collodion required ten seconds less exposure than the other;

\* Photographische Notizen.



but that when, with both materials, an exposure of thirty seconds was given, then the other collodion caught up to mine. Two plates which had received long exposures exhibited little difference in the nature of their film: although the two collodions, if exposed for a brief time only, were widely different.

At the same time the character of the pictures in the two plates was differently marked. In my collodion the lights were very strong, almost over-exposed, while in the other they were more transparent and more finely graduated. The last point is of importance. How often do we complain that the white linen and white garments appear as a patch in the picture! According to my view, details in the lights are just as important as details in the shadows, and a collodion which shows fine gradations in the lights will exhibit finer half tones than one which renders high lights too dense.

But it may be said that if sensitiveness for the shadows is wanting, then the picture becomes hard. This is quite right; but then I assert that with a not insensitive, but less sensitive collodion, harmonious pictures may still be produced when the shadows in nature are lighted up as much as possible during exposure. A hundred instances in practice prove this. I could cite many a skilful photographer whose collodion is not of a most sensitive nature, and who nevertheless produces excellent portraits with it. Collodions which show the greatest sensitiveness give the high lights too dense, as a rule; they are much to be recommended when working in a dull light, because in this case the high lights are usually flat enough. If, however, a strong source of light is at hand, and especially bright objects to be depicted, then a less sensitive collodion is to be preferred, for it gives more details in the lights. Only, care must be taken that the shadows are properly lighted up. Reutlinger, of Paris, who at the Vienna Exhibition showed some very beautiful portraits with finely detailed white drapery, works in different lights with different kinds of collodion.

It would be an important matter if manufacturers could produce us a collodion which would be excessively sensitive for the shadows, but not in the same degree sensitive to the high lights. Whether such apparently contradictory qualities could be imparted simultaneously to a collodion is a question. The addition of bromine salts will not advance matters. These act very well as regards sensitiveness for shadows; but if too much is added, then the sensitiveness of the collodion decreases altogether. An increase in the amount of pyroxiline also increases the sensitiveness of a collodion, but, seemingly, in a greater degree for the lights than the shadows.

I would, however, recommend nobody to tamper with a good commercial collodion, for it is seldom that any good comes of it. I know people who are continually altering their receipts, and swear, at every new trial, that the philosopher's stone has been found; and yet, when it comes to taking a good portrait, they invariably fail. It is best to stick to one kind of work where it is a question of business; at any other time one may experiment as often as time and opportunity permit.

Those who desire to modify highly sensitive collodion which gives too dense lights may dilute it with one-eighth or one-tenth its volume of ether. The collodion will then work more slowly, and render the high lights more delicately.

#### ABOUT THE DEVELOPER.

BY DR. H. VOGEL.\*

ABOUT two years ago it was rumoured in Berlin that a young and very skilful photographer was in the habit of employing a developer which did not contain alcohol. The matter was much talked about as quite an exceptional circumstance, and was disbelieved by many. But it is nevertheless a known fact that with freshly prepared silver baths no alcohol is really necessary in the developer, although it

becomes requisite as soon as the silver solution has been used for some time, and has taken up alcohol from the collodion plates dipped into it. The photographer in question, however, found that no alcohol was contained in his bath, for the simple reason that every night the liquid was emptied into a shallow porcelain dish, and the spirit allowed to evaporate. I asked him for the recipe of his developer, and it was as follows:—

Sulphate of iron ...	...	...	5 parts
Glacial acetic acid...	...	...	3 ..
Water ...	...	...	100 ..

At once I saw the explanation of the circumstance. Alcohol was not included in the formula, it is true, but glacial acetic acid was there, and photographers are not all aware that alcohol and glacial acetic acid exercise in some cases a similar action. If you use an old alcoholic silver bath, and develop a plate from it with a developer containing no alcohol, but one per cent. of glacial acetic acid, the result will be a streaky plate, because the alcoholic film repels a solution containing no spirit; but add two or four per cent. of alcohol to the developing solution, and the defect disappears. And exactly the same result is secured when more glacial acetic acid is added instead of alcohol. From this it follows, therefore, that the action of acetic acid is physically the same as that of alcohol, for it facilitates the flowing of the developer over a film prepared in an old silver bath.

To chemists the circumstance will appear by no means surprising, for alcohol and glacial acetic acid behave in the same manner as regards their repellent action against aqueous fluids. As a rule, it is stated that the acid has the effect of retarding the development and clarifying the developing solution. The latter view is correct, but not the former. A developer may be prepared to which no acid whatever is added, but as much alcohol instead, and it will be found that the same acts quite as slowly as if it contained acid. I have, indeed, often employed a developer which had no acid at all in its composition, but only alcohol, and have obtained good results with it. But this developer I found became turbid on standing, a circumstance that may be avoided by the addition of one-tenth per cent. of sulphuric acid. With such a developer, containing no glacial acetic acid at all, I have worked for years, as also my pupils. Additions to the developer of such substances as sulphate of copper, sugar, &c., which have often been recommended, have no particular value. Sugar acts somewhat as a retarder, such as is desirable in the case of freshly prepared baths and a strong light; but the same effect may be just as readily produced by employing the developer in a more dilute condition.

I cannot forego this opportunity of telling a curious little episode from life concerning the developer. A photographer in Silesia, who is now dead, complained to me of development streaks, and sent me a plate which, truth to tell, was really an awful sight. He stated that he had tried everything he could think of to overcome the difficulty. He had altered the proportion of alcohol and acetic acid, had employed new silver baths, &c., but all without success; and in the developer, therefore, must be the fault, for the streaks only become visible upon its application to the plate. I examined the test plate more carefully, and discovered that the so-called development streaks were observable only in the background. On the outline between the figure and the background they ceased altogether; in the figure, on the floor, &c., there was not a trace of them. There was no doubt in my mind, therefore, that the streaks in question were simply the folds and creases of the background itself. I recommended the photographer to change, not his developer, but his background, and the cure was at once at hand.

A number of photographers employ the developer in intensifying, while others, again, will have nothing to do with it in this capacity. "It produces stains and a meally

\* *Photographisches Notizen.*



precipitate," they say. I quite agree in this opinion, but would add that both stains and precipitate are to be avoided. Stains or streaks are formed because the silver solution added to the developer has the effect of diluting it, the percentage of alcohol becomes smaller, and the liquid does not flow evenly over the plate. For this reason I employ, for intensifying with iron, a solution of silver which contains as much glacial acetic acid as the developer contains alcohol, or alcohol and acid together. For instance:—

Water	...	...	...	100 parts
Citric acid	...	...	1½ to 2	"
Glacial acetic acid	...	...	2 to 5	"
Nitrate of silver	...	...	2	"

With such an intensifying solution as this, there need be no fear of repulsion by the film. Meally precipitates are avoided by washing off the intensifier as soon as it becomes turbid. Braun, of Dornach, intensifies with iron. As a matter of course, the iron intensifier is only serviceable where moderate vigour is desired, as in the case of portrait or landscape photography. In this case intensify before washing the plate. If, however, it is a question of a very dense film, as in the case of reproducing drawings and engravings, a pyrogallie or other intensifier must be employed.

## Talk in the Studio.

**OBITUARY.**—Died, at Falmouth, on the 13th instant, Mr. James Siddons, Photographer, formerly of Sheffield.

**HABIT.**—There is nothing that influences us all in every department of life more than habit. Sometimes it is for good, sometimes for evil. It is like one's growth, it comes upon us so imperceptibly that we are scarcely aware of it before it is fixed irrevocably as a part of our being. In many cases acquiring a fixed habit is a great blessing; it enables one to perform a great many of the duties of life with but little effort; habit has made it a sort of second nature. In this direction may be mentioned honesty, promptness, punctuality, truthfulness, perseverance, order, system, &c. Some of these are inborn principles, yet they are all susceptible of improvement or degeneration. In photography habits of cleanliness, order, system, punctuality, and doing none but the best work, are virtues that every one should strive for; but in methods of working and many photographic manipulations habits are a pernicious evil. In coating and developing plates there should be no fixed habit, for the condition of the collodion, the temperature, the bath, the time of exposure, the lighting of the sitter may require change from day to day, and often, in some parts of the process, in every plate that is used. Habit will make a man hold his plate just so, whether his collodion be thick or thin, whether he wants a weak or intense negative. It will make him flow his developer the same without any consideration as to other conditions; it demands that every sitting should be made in the same place under the light, that screens and shades should be arranged in the same manner, that the camera should always be the same height, and that the same position and view of nearly every face should be made. Now there is nothing to be deplored in any man's work more than stereotyped methods or mancrisms, that become so patent that it is not necessary to look for the name on the back of the picture—it appears in the picture to all that are familiar with the work of the individual. Habit in this direction, then, like habits of dissipation, should be carefully guarded against, keeping the mind and hands as elastic and as free to adapt themselves to circumstances as the air we breathe.—*Photographic Times, U.S.*

## To Correspondents.

**OLD B.**—The want of coincidence between the chemical and visual foci used to be a common characteristic of the lenses of the maker in question. You cannot easily have it altered. Your only remedy is to move the lens for just that distance which experience teaches you is necessary. It is doubtful whether any systematic scale could, with advantage, be laid down.

**G. FREDERICK.**—The defect you describe is a very familiar one. You are fortunate never to have met with it before. Your bath, from long work, has become over-iodized; that is, it has gradually acquired more iodide from the coated plates than it can hold in solution, and the consequence is, that small crystals of the double iodide and nitrate of silver are thrown down upon the film, which produce pinholes in the negative. There are various remedies. A very simple one consists in adding an equal bulk of fresh un-iodized nitrate of silver solution. Another consists in first pouring the nitrate bath slowly into an equal bulk of distilled water, which will turn it milky; then filter, and afterwards add nitrate of silver to make the proper strength. Or simply add a couple of drops of hydrochloric acid to each pint of silver bath. Read various articles in last volume of *NEWS* and in the last two or three *YEAR-BOOKS* on the subject.

**AMATEUR.**—You may use the preservative solution to the end without altering it. 2. They keep well, but how long we have no means of saying. 3. About equal proportions of ether and alcohol when it gets unworkably thick. 4. The condition of the emulsion keeps changing very much. Read Mr. Cooper's articles on keeping and reviving emulsions, in our last three or four *YEAR-BOOKS*.

**FRED. YOUNG.**—With plates intended for immediate exposure, Mr. Gordon frequently washed off the gum. With plates intended to keep, the gum was always left on the plate. 2. Moderately good washing, but only sufficient to thoroughly soften the gum. 3. Yes; a little, amount proportioned to the rapidity of development.

**F. M. D.**—See article on another page. The yellow spots on the print marked A appear to have been the result of air-bubbles on the print whilst in the fixing bath, causing imperfect fixation. 2. The uneven toning may be due to one of two or three causes. A common cause is the presence of more free nitrate at one end of the print than the other. This would arise from the accumulation of the silver solution at one edge whilst hanging to dry; and the greater proportion of free nitrate would cause toning to go on quicker at that part. Another cause might be the draining of the albumenized paper carrying a thicker coating of the albumen to one edge of the paper, and the excess of albumen would cause the print to be somewhat redder in that portion. There appears in the prints a slight excess of albumen towards one edge as compared with the other.

**R. P. K.**—We have published many formulæ for making paper transparent for colouring at the back, and have no means of knowing the particular one to which you refer. The best plan is to soak the print in hot water first, so as to dissolve out the size, and then it may be made transparent by soaking with gum water; or it may be dried and made transparent by treating either with white wax, or Canada balsam dissolved in turpentine, or many similar preparations. You will no doubt be able to obtain the mislaid copies of our Publisher an application.

**F. H. W. B.**—Your negative reached us in fragments; but we are quite familiar with the defect, which is that commonly known, and often written about, as "matt silver stains." They spring from a combination of causes, but the collodion is the primary cause. It is of the horny, repellent character, which causes the solution to run in irregular, greasy-looking lines, which issue in the worm-like tracks of matt silver. Some want of precision and care in manipulation increases the tendency to this defect. A change in the condition of the collodion is one of the best remedies. Sometimes age will effect this change; sometimes the addition of one or two drops of distilled water to each ounce of the collodion will effect the change. Immerse the plate before it is as much set as usual. Be sure to allow the plate to rest upon pieces of fresh clean blotting-paper in the dark slide, and frequently wash the inner frames to secure perfect cleanliness. Allow no undue lapse of time between the plate first leaving the bath and development. If you read back volumes of the *NEWS* and *YEAR-BOOKS* you will find many articles devoted to the subject.

**GUSTAV STRAUBE.**—Many thanks. We shall have pleasure in hearing from you, and hope to write to you soon. Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED.

- Mr. THOS. ILLINGWORTH, Halifax,  
Photo. Group of Sir F. Crossley, Mr. J. Crossley, and Mr. Joseph Crossley.
- Mr. E. GREAVES, Halifax,  
Three Photographs of James Stansfield, Esq., M.P.
- Mr. S. C. WESTON, Folkestone,  
Three Photographs of Sir G. Wolsey.
- Mr. J. AARNER CLARKE, Stourbridge,  
Photograph of "Hagley Hall."
- Mr. G. DOWNS, Bedford,  
Two Photographs of Concert in New Corn Exchange, Bedford.  
Two Photographs of Opening Ceremony of New Corn Exchange, Bedford.
- Mr. L. ROBERTS, High Wycombe,  
Photograph of Hughenden Manor.  
Three Photographs of Hughenden Church.



## The Photographic News, June 5, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO. PRESERVATION OF RELICS BY PHOTOGRAPHY—PHOTO- CHROME—POISONS IN THE STUDIO.

*Preservation of Relics by Photography.*—In Mid Germany, in the grand old forest of Thuringia, there has been for some time past a little hut in the vicinity of Ilmenau, which Goethe turned into a summer-house, and oft frequented when desirous of rest and seclusion. The black pine trees, with their shade and fragrant odours, were so dear to Germany's greatest poet, that nearly every summer, for a score of years, he visited the retreat; and here it was, inspired by the quiet beauty and peaceful repose of the scene around, that he wrote his celebrated *Nachtlied*, or "Ode to Night." This sweet little poem was scribbled one evening in pencil upon the door of the hut, and while a recognised favourite with his readers, it was held in the highest esteem by the great genius himself. He was never tired of reading over the crude characters as he had pencilled them down upon the plank, and from time to time he would go over them again to render them more legible. By-and-by, when Goethe had ceased to wander about this earth in the flesh, pilgrimages began to be made to the little summer-house upon the *Kickelhahn* hill, which was still supposed to be haunted by the spirit of the gifted being, and the forester of the district was entrusted with the safe keeping of the shrine and its valuable manuscript. Great vigilance had to be exerted to prevent injury being done to the place by relic hunters, and one day the forester came upon a tourist—he was said to be a blonde-haired son of Albion—in the act of sawing out boldly the much-coveted plank with the precious lines inscribed upon it. Every year the trust became a more responsible one, and at last it was resolved to place a frame and glass plate over the relic, and have recourse to the photographer to secure a *fac simile* of the writing and its surroundings, in case of any untoward accident. The aid of the camera was not invoked a moment too soon, for very shortly afterwards a fire occurred in the hut—whether due to accident or design is not known—and in a few hours the little house was a heap of ashes. The photographer's plate, however, had retained an impress of the original, and from the image, thus timely secured, engravings upon metal were at once produced.

*Photochrome.*—A photochrome, or photochromic image, we have come to look upon as meaning a photograph produced in its natural colours, such as those which Becquerel and Niepce de St. Victor were in the habit of securing by means of the violet sub-chloride of silver. The word has also been used by M. Leon Vidal, we believe, for the coloured impressions he produces by superposing several monochromes. It was with no little surprise, therefore, that we came upon a paragraph in the *Paris Figaro*, the other day, which defined the word in quite a novel manner; and as this seems to be the more recent definition, we consider it our bounden duty to make our readers acquainted with the same. Photochrome, according to our *Paris* contemporary, it seems to us, means more how to make a picture of oneself than anything else, for it is, we are told, "a new ponatum, that renders again to grey hair its primitive colour through the action of light; being, indeed, photography applied to the hair-dresser's art." As nothing is said about toning and fixing the head afterwards, one can hardly understand how the photographer is to be made use of in improving one's locks, or what the *modus operandi* may be. The only plan of proceeding that occurs to us for the moment is, that the grey hair is rendered sensitive to light, and then another head of hair of the desired tint is placed near at hand, and reflected by means of a lens or other means upon the decayed curls, which thus become impressed with the tint of the original. But it is scarcely worth while, perhaps,

to go into the matter very fully, for, after all, the definition given may only be the advertisement of some enthusiastic hairdresser.

*Poisons in the Studio.*—The valuable hints given by M. Ernest Lacan, in our last issue, upon the subject of poisons in photographic studios, and upon the best plans to be pursued in the case of the same getting into the system, cannot be too closely studied by photographers. Dr. Napias has, seemingly, studied the matter very fully, and has given much attention to such of the poisons as, in ordinary manipulation, an operator comes in connection with, and which poison by contact, the solution penetrating through the pores of the skin. At the same time, it behoves one to pay attention to the effects of the substances also when taken internally, either through accident or design; and we would supplement Dr. Napias' valuable observations by a word on the subject of pyrogallie acid. To give some idea of the injurious character of this universally-employed compound, it may be mentioned that its poisonous action upon the stomach and system is not only as deadly as that of cyanide of potassium, but its effects are far more distressing to the sufferer. Cyanide of potassium brings on syncope very speedily, and then an unconscious death; but pyrogallie acid produces most acute pain, and its action is slow and agonising. It acts, indeed, when taken internally, very much in the same way as phosphorus. The amount that will ensure death is calculated to be about a quarter of an ounce. Sixty grains given to a dog caused it to die in a couple of days, while thirty grains brought about the same result in sixty hours. A substance which is to be met with in most photographic studios—certainly in those in which carbon printing is carried on—is, according to M. Personne, an excellent antidote for pyrogallie acid: we mean oil of turpentine.

### M. DUCOS DU HAURON ON HELIOCHROMY.

A SECOND pamphlet has just been issued by M. Louis Ducos du Hauron in continuation of his work published in 1870 upon producing photographs in colour. M. Hauron's method, it may be remembered, is to secure three monochrome prints by means of three negatives of any object, taken respectively through orange, green, and violet glass screens. As all mixed colours are combinations of the three primary colours, red, yellow, and blue, M. Ducos argues that by building up with monochrome images of these three tints, a representation of an object in its normal colours ought to be obtained. He photographs the object, in the first place, through green glass, thus cutting off all rays except those of the same colour as the glass, and of the negative thus secured he makes a copy by the carbon or Woodbury process in red; a second negative is taken through violet glass, and of this an impression in yellow is obtained, and the third negative is taken by the aid of orange glass, and printed in blue pigment. Several obstacles were in the way of working the process, not the least of which was the difficulty of securing an image behind an orange glass, even with a very prolonged exposure; and it is for the purpose of reporting progress that M. Ducos comes before the public again.

He now states that he is enabled to reduce very considerably the duration of pose required for the formation of an image behind red and green glass, to employ for his three negatives an ordinary collodion, and to simplify the manipulations considerably.

He goes on to say, "Before describing my operations, and indicating the formula employed, I hasten to rectify an error in my previous publication of 1869 and 1870, an error into which it was easy to fall, as will soon be seen. It consisted in the assertion that the anti-photogenic colours were incapable of furnishing latent images susceptible of being developed by known agents. This statement is true



in certain cases, but incorrect in others, as a prolonged research has convinced me.

Thus, a collodionized plate, containing either iodide or bromide of silver, exposed moist to red light in the camera, with or without an excess of silver, will yield no image on development, even after an exposure of three hours in the sunshine. A plate of the same kind freed by washing of its excess of nitrate of silver will, on the other hand, after an exposure of two or three hours in the sun, yield an intense image. This is, it will be seen, quite the contrary to what happens in white light, which impresses the salts of silver more rapidly in a wet than in a dry state. Finally, a plate of the same kind exposed to the same red light, if certain materials have been introduced into the collodion—such as resin, for instance—will give an image quite as well wet as dry. When iodide of silver is used with an excess of nitrate, the wet image is more intense than the dry. But one essential condition to be noted is, that the preservation of the image in a wet state, such as I have referred to, must not be obtained by the addition of a hygroscopic substance, such as a mixture of albumen and glycerine. If this method of maintaining the moisture of the film is adopted, it will be insensitive to red light. Another means must be employed, therefore, and this consists in approaching the red glass to the film to within two millimetres, and thus imprison between the two glasses an air saturated with moisture. A second condition, not less important than the rejection of albumen and glycerine, is that of employing only distilled water for washing; for the presence of the slightest trace of salts in the water is sufficient to injure the sensitiveness of the film for red light."

M. Ducos then states that his attention was called to Dr. Vogel's experiments, in which a red colouring matter named coralline was employed in the bromized collodion, rendering the latter as sensitive to yellow as to the indigo rays.

"Struck by this observation of M. Vogel, I was curious to know if bromized collodion coloured with coralline was not capable of furnishing images in red light more quickly than was the case when resin is used. The researches which I conducted with this view proved to me that bromized collodion coloured with coralline, and employed either dry or wet, is much more impressionable by red light than any other collodion. The idea then occurred to me to try iodized collodion coloured with coralline, and the result was a most happy one, for it was found to be much more quickly acted upon by red rays than the bromized collodion. It permits one to produce in the camera with red light, with a doublet lens of medium rapidity, a landscape illuminated by the sun in twenty-five or thirty minutes; the same preparation allows one to take a negative of the same subject with green light in two or three minutes; while with blue light an image is secured either instantaneously, or with an exposure of two or three seconds, according as the tint of the glass is more or less pronounced.

"I have found that, besides this, iodide of silver gives, by means of the green and yellow screens, a translation into black of the different colours, which conforms to the heliochromic theory, and in this respect it is superior to bromide of silver. This last, employed alone, furnishes, with the green glass, a negative in which the red objects are by no means feebly represented, and with the violet a negative in which the yellow objects are, on the contrary, a little too pronounced. This apparent anomaly is the result, evidently, of the bromide of silver being too sensitive to certain rays which enter into the composition of the green and violet glass, and of which the action upon our organ of sight is dominated by the action of other rays of the spectrum. Four parts of iodide and one part of bromide in the collodion succeed very well, and such is the proportion that I recommend."

M. Ducos then goes on to describe the practical carrying out of the operations. He employs a collodion containing four parts of iodide to one of bromide, and to every hundred cubic centimetres of this collodion adds four decigrammes of red coralline, which is soluble in alcohol. Three plates are coated in the ordinary way, and if the wet process is used the coloured glass screen is arranged in front, and almost touching it, so as to prevent the evaporation of the collodion upon the plate. To avoid any danger that might arise from a condensation of moisture upon the sheet of coloured glass, this is coated with normal collodion, so that its surface remains in a wet state. The exposure required for each of the three successive plates must be estimated, as nearly as possible, according to the basis already laid down. The development is conducted, as usual, either with iron or pyrogallie acid, the plate being redipped if a long time has elapsed between exposure and development; and when fixed, the negatives are coated with:

Water ...	...	...	100 cubic cents.
Albumen ...	...	...	25 "
Glycerine ...	...	...	4 "

When dry, the red tint given by the coralline is removed by pouring over alcohol repeatedly, which has the effect, also, of hardening the image by coagulating the albumen. A hard varnish is finally employed.

In photographing by the dry method, resin is added, besides coralline, in the proportion of two or three decigrammes per hundred cubic centimetres. The washing of the plate is conducted with distilled water alone.

To secure the three negatives of perfect sharpness and of the same size, each of the coloured glass screens should be put quite close to the sensitive plate. The interposition of the coloured glass having the effect of changing the focus slightly, this is easily remedied by fitting to the frames serving for focussing, against the polished surface of the glass, a colourless plate of the same thickness as that of the coloured plate which is fitted in the camera or dark slide. Of course all the coloured plates must be of the same thickness. In this way a correct focus of the object is secured.

Care must be taken in choosing the coloured glasses. Coralline-tinted collodion applied to a plate may be employed instead of red glass; and when the wet process is employed a more intense red is desirable than with dry plates. The green plate should show blue and yellow objects with equal definition. If too blue, collodion tinted with curcuma may be employed to give it a more yellowish tint. In the wet process a more yellow plate is required than in the dry. As regards the violet glass, it is preferred of a dark tint.

The printing of the three clichés with monochrome carbon tissue, of a red, yellow, and blue tint, is then proceeded with, or by any other mechanical process that is suitable, the impressions being secured, as recommended by M. Leon Vidal, upon translucent material; and the finished images are finally superposed, and should give a result possessing the same colours as the original object.

#### FAILURES IN CHEMICAL EFFECTS.

BY F. WALLER.\*

ONE of the most prolific causes of harsh negatives is a want of harmony between the bath and collodion. Where the sample of collodion is known to be good, and the productions are harsh and unsatisfactory, it will be generally found the bath has not been sufficiently iodized. In making a new bath, as it is a well known fact that a strong solution will dissolve more iodide of silver proportionately, it is a good plan to saturate your solution at a higher gravity than required for use, and then, weakening to the proper standard, the solution will be exactly iodized.

\* *The Photographer's Friend.*



Many will urge that the bath will then soon "kick up" and give pinholes, but careful addition of an uniodized solution at night, after work, will prevent that. And as most everyone has found the bath works finest immediately before giving pinholes, the nearer to complete saturation it can be safely worked the better.

Too much cannot be said against the use of strong developer, this being the most ordinary mistake; and the smallest quantity of acid sufficient to flow nicely is all that is necessary. The solution should not be dashed on, nor should the plate be rocked, except in cases where more density be required.

Every one has his pet formula for collodion, and one is as good as another, provided the proper relations are maintained between that and other solutions. Excessively iodized collodion I have not worked successfully with a weak bath, nor *vice versa*.

One cause of failure which has given trouble has been undue haste in the flowing of the plate. It should be held nearly horizontal, and kept so. There is no need of hurriedly tilting it back and forth: let it dry to a nicety, and immerse in the bath slowly, and allow it to remain at least a minute after being apparently coated. By this means the negative is of nearly equal density in all parts, and no streaks from imperfect coating can occur.

One word more as to the rectifying the bath. The iodine should be taken out very rarely, and injudiciously throwing down the iodine with water at each boiling is more apt to give trouble than prevent it. When the bath needs rectifying, the simplest plan is to neutralize carefully with ammonia; set in the sun until perfectly clear; boil down one-half; dilute to required standard with pure water; filter, and add nitric acid C. P.; if the bath is to be used at once, add considerable; but if it can be allowed to stand a short time, a small quantity will do. If upon trial it works harsh, but clean, flow the largest plate it will contain, and leave it in over night. Sometimes an acid bath will fog; if it should occur in regular streaks running across the plate in the same way the plate was dipped, the bath is not sufficiently iodized. Keep the bath well iodized, and it will need no tinkering; keep your collodion but a short time, and you will work quickly; keep your developer weak, and your negatives will be smooth and of a fine grain.

### TURPENTINE IN NEGATIVE VARNISH.

BY JOSEPH UNGAR.\*

SPLITTING of the negative film is one of the chief banes of photography. It is true that means have been proposed to remedy the evil, the employment of an impalpable powder, such as soot and levigated graphite, aiding considerably when the defect is not too wide-spread; but the deposit of foreign matter in this manner has always an injurious influence upon the prints. Broad ruptures in the film cannot be remedied at all in this way, and the only means is to employ a pigment of some kind. But of the impressions taken from negatives doctored in this way the less said the better.

It would be a weighty problem to solve how many hundredweight of silver, either from inattention or lack of time and opportunity, find their way into the drains in the form of waste residues, and are lost for ever to the world. The amount would be something appreciable, but much greater and more important is the loss to photographers involved by the employment of bad varnishes. Every day, too, the loss is more severe, for the negatives of the present are often retouched at the cost of great labour and money. And yet the evil, notwithstanding its grave nature, is regarded with considerable indifference. Much has been spoken and written about the matter, and yet the plague exists, which destroys the collodion of our finest negatives. It may be asserted that

even the best studios suffer from this calamity. A German commission, which met two years ago to enquire circumstantially into the whole matter, did not arrive at any material solution of the difficulty. The multiplying process advocated by M. Obernetter, of Munich, is a most valuable method, no doubt, whose real value has not, perhaps, been fully recognized; but this cannot, unfortunately, be employed for all negatives that have been stored up for a considerable period. The great point is to pay particular attention to the nature of the varnish applied, and this is a subject which has never received the general consideration of photographers.

It is also to be regretted that the preparation of varnish is not in the hands of the photographer himself, and thus he has no control over its manufacture: its composition is kept a secret, and one must needs rely upon the good faith of the manufacturer. With other preparations one can judge pretty well what one is using, but with a varnish, the unsatisfactory results it may yield are not obvious until it is too late. We trust our most costly negatives to its influence, and when, after a shorter or longer interval, that arch fiend, damp, aiding the while, we find out our mistake, there is, unfortunately, no help for us.

The author has not essayed to combine any new recipes, but has set himself the task of watching for several years the behaviour of different varnishes in use, and with whose composition he was acquainted. As the result of his investigation he has found that those which, besides the lac, contained a good quantity of Venetian turpentine, have proved the most satisfactory.

In the first place may be mentioned the combination of two parts of yellow shellac and one part of turpentine, without addition of another resin, dissolved in weak alcohol. This is pointed out, not because it is absolutely the best, but because it is the one which by chance was first employed, and which has been tested for a longer period than any other, the negatives prepared with it being in perfect condition at the present moment. A number of clichés covered with this varnish have withstood the wear and tear of a voyage and six years. Against this varnish, however, may be adduced its brownish tint, which in places where it has been poured off the glass is rather thick, and causes longer printing, producing unequally printed impressions. Another objection is in its varying smooth surface, which renders retouching very difficult.

There are two other compounds, which differ from one another merely by reason of the amount of resin contained in them, gum sandarac being the principal constituent, the one containing one-third turpentine and one-fourth camphor, and the other turpentine to the extent of one-half and camphor to the amount of one-sixteenth. Both these are quite as excellent as the varnish first referred to, the latter of the two being especially to be recommended. Upon a film of varnish of this nature it is very easy to retouch, it being possible to work upon it with the hardest pencils of Siberian graphite without preliminary preparation of the surface. Plates of this kind may be allowed to remain for weeks in dilute nitric acid without the film being attacked in the slightest degree. To remove the film when the glass is required for use a second time, a warm alkali solution must be employed. In time the film becomes a little brittle, so that retouching after the lapse of years with a pencil may bring about a breaking up of the film. Splitting of the film, however, is only seen in those cases where great negligence has been present, and the plates have not been placed in paper envelopes and subjected to a moist or changeable temperature; but even then the defect is never seen to such a great extent as in the case of varnishes which are prepared without admixture of oil of turpentine.

The author has purchased a varnish which possessed the valuable property of not allowing the photographer to remain long in ignorance of his fate, and which produced splitting of the film within a quarter of an hour after its

\* Photographische Correspondenz.



application to the plate. This was rendered perfectly good by the addition of turpentine. Castor oil, which has also been suggested for a similar purpose, is, in my estimation, far behind turpentine as a preservative constituent of varnish. It seems not improbable that the turpentine adds much to the toughness of a varnish, counteracting the brittleness of the lac; and for this reason there can be no doubt of its desirability as a constituent of negative varnish.

At the same time this useful material may bring destruction with it. It is, however, in everybody's power to shield himself from injury, and we may here make clear a misconception in the matter. It has happened to many photographers that, on applying varnish to a warm plate, the film is dissolved away to such a degree that it is impossible to do anything with it in the printing frame, the effect being similar to that which would be produced if the unvarnished film was treated with ether or collodion. The cause of this is not unfrequently attributed to the bad composition of the pyroxiline in the image; but others attribute the fault to the alcohol in the varnish. If the first-named cause were really the true one, then all pictures prepared with the same collodion would be destroyed in the same manner when treated with varnish; but this we know does not happen. Generally speaking, a number of negatives are treated with good results, until, at last, the film of one of them, prepared in exactly the same manner as the others, suddenly gives way. No more can the alcohol be considered at fault, for in most cases a weak alcohol is employed for the purpose; and those even who, in order to accelerate the dissolution of the gum lac, employ absolute alcohol, are in the habit, subsequently, of adding water to bring down the strength of the liquid. But even if an alcohol of great strength were employed, this would not be capable of dissolving away the collodion film to the degree complained of. Destruction by means of alcohol is of quite another character. Poured upon a heated cliché, it causes that portion to become thinner, acting on the surface, indeed, like an etching fluid. On the other hand, if the varnish destroys the film, it does so by dissolving the same altogether, the silver precipitate flowing off in grey furrows.

It is clear, therefore, that some other agency must be at work, and this is, in truth, the case. Proof of this may be obtained very easily by the aid of a twenty-per cent. solution of Venetian turpentine in alcohol. If a well-warmed plate is poured over with this fluid, it is possible to produce a dissolving effect upon any collodion plate, no matter what the description of pyroxiline employed. The result is the more certain and rapid the more concentrated the turpentine solution happens to be. An increase in the temperature, and a stronger alcohol, favour the result in a great degree.

To ascertain how much turpentine may be safely added to varnish, we tried, for the purpose of experiment, a solution of equal parts of shellac and turpentine. The result showed that cold or slightly warmed films were not attacked by this fluid; the negatives might, indeed, be dried afterwards at the fire. If, however, the plates were heated, as is usual, prior to their being varnished, then the phenomenon of the film being dissolved was observed. This furnishes us with a reason why in a series of plates only now then an accident occurs; the plates must have been heated too much to withstand the amount of turpentine in the varnish.

According to this experiment about half, or little more, of turpentine than of lac, should be the maximum employed in varnish, and with this amount and a weak alcohol one may fearlessly operate, supposing the plates are not too highly warmed. This combination furnishes a very durable varnish. Our results are confined, it must be pointed out, to the combination of lac with and without admixture of turpentine.

We cannot, and do not, assert that there are not other

descriptions of varnish which possess higher qualities than the above, but only here note down, for the information of brother photographers, our experience in the matter, in the hope that they will reciprocate with information they themselves have gained; for I take it to be everyone's duty to contribute what he knows towards the longevity of our negatives.

In such an extensive field as ours, it is often the case that something escapes even the sharpest vision; while on the other hand another finds himself before the goal unawares, and has merely to stretch forth his hand to secure the prize. And so much has already been done in the cause of progress, by working together, that there is little doubt that if assistance is afforded on all sides, our arch enemy, that causes so much destruction among our negatives, will be at last successfully annihilated.

#### OUR PHOTOGRAPHIC PORTRAITS.

MR. BARNARD CRACROFT, one of the wittiest and most acute of modern British essayists, is the author of an article, originally contributed to the *Saturday Review*, on the "Art of Appearing Like a Fool with Propriety." It is full of the fruits of delicate observation of human nature, and of a most gentle and wise philosophy. We commend it to any of our readers who contemplate going, in cool blood, to have their photographic portraits taken. We know of no undertaking more trying to the average dignity and self-respect of, at least, the male portion of the human race, and no process more calculated to puzzle those who like to trace some connection between results and the means employed to produce them. Certainly, photographic portraits, as now taken by skilful operators, are a very pleasing thing, and not less surprising than pleasing. They are often attractive on account of the obvious delicacy and fidelity of the workmanship, and the evidences they afford of the manipulation of trained hands. But their attractiveness is by no means of this kind only. They are often very complete expressions of the character of the subject, which they present with simplicity and refinement. We have before us at this moment the portrait of an old gentleman, an artist, which is exquisitely true to a nature of the rarest purity and grace. The gentleness, the elevation of a mind wholly given over to the contemplation of the beautiful and the pursuit of a difficult and lofty art; the strength of an enthusiastic spirit; the animation flowing from a native shrewdness, keen sense of humour, a lively sympathy with human feeling, and a spice of vigorous but controlled combativeness—all these are in the picture, as well as the minute markings in the face of old age, the beauty of a snow-white beard, and the dignified carriage of a form broken with years and suffering, but sustained by a firm will. The gallery of the gentleman who produced this portrait is full of pictures of equal interest, and very varied in character. Actresses, singers, young girls, old women, fops, artists, politicians, students, rouds, clergymen, millionaires—the scores of people one meets on Broadway—are to be seen, many of them with faces marked by characteristic expressions or the equally characteristic want of it.

What inspires with wonder the observer who ascends from these to the operator's room, is how all this array of vivacious and expressive faces was turned out by the apparently barren and incongruous machinery of that illuminated den. The torn and rickety reflecting screens, the dingy velvet chairs, the rocks of wood and paper worn by the stream of human forms ("a continual dropping that weareth away a real stone"), the abominable racks and grips of iron—all these inspire one with a horrible sense of artificiality and arrangement entirely incompatible with freshness, or ease, or grace, or naturalness. This feeling is intensified when the observer is fairly "posed," his head twisted as it was never twisted before, unless by the photographer's merciless hands, and as it would never remain



were it not for the iron griffin that holds him in its unfeeling grasp, his eyes directed to a fixed point, and his whole system rebelling against the silent, rigid, despotic disposition of himself to which he has submitted. The skilful artist, with an occult purpose which one feels is doomed to disappointment, bids you to give your countenance a "little more animation." You grin in a ghastly way at the suggestion, when your sense of mortification at the figure you know you are making is broken in upon by your tormentor, who tells you with a comprehensive gesture—"That's it, precisely! Now let that dissipate into a genial smile, and I'll give you a good one." Mentally, you remark, that if he does give you "a good one," it will wear an expression of mingled idiocy and rage.

Yet the chances are nine in ten, if your photographer is among the best, that he will produce for you a portrait in which your friends will find a dozen different phases of your character. His experienced eye perceives the means of reaching the effect he is in pursuit of in arrangements that your uneasy consciousness condemns, and against which your pride rebels. Perhaps a rational man ought to be a little rebuked, a little touched with humiliation, at the reflection that he knows so very little about how he really looks. The conviction that one was really appearing with as much dignity and grace as were natural to him, when he felt that he was looking constrained and silly, suggests the awful possibility that when one appears to his inward eye all that he desires, he may be the very reverse to the impartial observer. There is a good deal of conceit in every kind of behaviour in the clutches of the photographer. The man, if not the woman, who can be unaffected and unconscious, who can feel that he don't look as if he cared for his appearance whether he does or not, to whom the photographer and his complex machinery for "posing" are only matters of study for a philosophic mind, is not a common phenomenon. Our old artist friend, whose bright and placid portrait we have praised above, may be one of them. But even the record of his consciousness might not sustain us in that bold assertion.—*New York Times.*

## Recent Patents.

### APPLYING AND FIXING DRY COLOURS.

BY ROBERT FAULKNER.

THE following improvement received provisional protection only. It consists in mixing dry colours with dextrine or other suitable material, and applying it to paper, canvas, or other textile material, and subsequently moistening the back with water to fix the colour firmly in the texture. The specification is as follows:—

"My invention relates to a method of applying dry colouring matter, such as is employed for crayons, chalks, and the like, to porous surfaces, such as canvas or paper, and fixing the colour so applied. For this purpose I mix powdered dextrine with the powdered pigment, and I apply the mixture by rubbing in the manner usually employed for powdered pigments. I then moisten with water the back of the porous surface, and the water soaking through it dissolves the dextrine applied with the colour, and thereby fixes the colour. The water may be used warm or acidulated, so as the more readily to dissolve the fixing material.

"Instead of applying the pigment in the form of powder, it may be mixed with dextrine, and the mixture made up into crayons, which can be used for drawing on the surface. In this case the surface should be moistened before drawing thereon; when dry, the drawing will be fixed, or, if necessary, the back may be again moistened, so as to ensure the solution of the dextrine.

"I find it advantageous, especially for producing large backgrounds, such as are employed for photographic purposes or for wall decoration, and also when paper is the surface to be coloured, to serve it first with a weak solution of dextrine, and when it has dried to apply the pigments as above described.

"Instead of dextrine, starch, gum, or soluble gelatine may be employed in the manner described above; but I prefer dextrine, as being most readily acted on by the water.

"As the process above described essentially consists in applying along with the pigment a substance which is afterwards dissolved, and which, when dry, serves to fix the pigment, it may be readily understood that substances other than dextrine, gum, or gelatine might be used, suitable solvents being applied instead of water. Thus lac, resin, or other substances forming the ground of varnishes, might be applied with the pigments, and in such case the back of the coloured surface would be moistened with turpentine, benzole, or spirituous liquids capable of dissolving the matter so applied for fixing."

### COLOURED PHOTOGRAPHIC PORTRAITS.

BY J. E. PALMER.

THE following patent consists in a mode of colouring glass transparencies, or backing them with suitably coloured papers. The specification is as follows:—

"My said invention consists in certain improved methods of copying photographic pictures from negatives, and in colouring the copies so produced in oil or water colours, or shading the same in monochrome so as to possess great softness and artistic effect.

"In the first instance a transparent picture is obtained of the original size of the negative, or enlarged to any desired dimensions on glass or other suitable material, and the same is coated with a 'matt' varnish. The transparency is then placed against the light, with a sheet of tracing-paper covering the same, and the outlines of the picture traced on the said paper with a lead pencil. The tracing-paper is then placed with the pencil marks against the glass, and the pencil marks retraced with the lead pencil on the other side of the paper; grey crayon is then rubbed on the outlines on the side first traced, and the whole placed on drawing paper of the desired grain, slight pressure being used by a pencil or other instrument over the outlines until the whole of the outlines are marked on the paper. The shading and colouring are then commenced; crayons, oil or water colours, powder colours, prepared chalk, or other suitable materials being employed on the said paper as a packing, and placed against the photographic transparency, thus forming by its combination a fine artistic effect; nicety of touch in applying the aforesaid materials is not necessary, as the matt varnish acts as the softener.

"If clear varnish should be preferred to the matt varnish, Reigate silver sand, or Calais sand, or some similar substance, or substances is or are used to assist in the distribution of the crayon or powder colours, but should not be pressed so hard as to abrade the surface of the paper, as a grain of a very artistic quality is produced by that of the drawing paper alone.

"For the further carrying out of my invention, I use photographs for the backings of the said transparencies, my mode of proceeding being to make designs in artistic shaded effects in oil, water colour, pencil, steel, or zinc engraving, or stone in stipple, etching, fine grain, landscapes, interiors, and other suitable designs on canvas, paper, or other material, making photographic copies of the same on albumenized or plain paper, or other suitable material, leaving a white centre suitable to receive the photographic transparency, and softening and blending the photographic design into the edges of the said transparency by means of the aforesaid crayons, powder colour, oil or water colours, giving an effect similar to that produced in the ordinary way by double photographic printing. In the case of albumenized paper being used, I float the same with the matt varnish, making thereby an easy surface to receive the colours, and on the photographic designs on plain paper, if to be in oil colour, I prepare the paper to receive the same with size in the usual way.

"Having thus declared and ascertained the nature of my said invention, and in what manner the same is to be performed, I would observe, in conclusion, that what I consider novel and original, and therefore claim as constituting the invention secured to me by the said hereinafter in part recited letters patent are:—

"1st. The combination of a photographic transparency with or without matt varnish, with a backing on paper or other material, with effects produced on the said backing, substantially as hereinbefore described and set forth.

"And secondly. The combination and backing up of photographic transparencies with photographic designs, and blending the same to produce a perfect appearance to the eye, substantially, as hereinbefore described and set forth."



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## AMERICAN PHOTOGRAPHS.

FROM the earliest days of photography the devotees of the art in the United States have taken the lead in technical and manipulative excellence; but it is only of late years that they have asserted an equal supremacy in art culture—or, if not supremacy, at least equality. If they do not lead in art photography (at least so far as it is applied to portraiture), they do not follow. From time to time we meet with examples from all parts of the Union which are equal, in every quality of excellence, to the best work of the best men in the Old World. We have recently had a pleasant opportunity of examining a series of portraits rarely equalled, either in interest or excellence, the special circumstances giving the examination a peculiar zest. An American lady, spending some months in this country, attended a course of class lectures by Professor Huxley, who declined to accept a fee from the fair student. The lady conceived the happy idea of acknowledging the courteous liberality of the Professor by presenting him with an album containing the portraits of distinguished men and women in America, and commissioned Mr. C. D. Mosher, of Chicago, to prepare an album with such a selection of portraits. We are indebted to the lady's courtesy for a sight of this album, and also for acting as intermediary in transmitting some very beautiful examples of Mr. Mosher's photographic and literary work.\* A very handsome album, filled with very perfect cabinet photographs of heads, all in greater or less degree distinguished, and distinguished looking, full of character, force, and intelligence, constitutes a gift which cannot fail to gratify the Professor more than the fees of many students, probably initiating a host of shadowy friendships one day to be consummated by personal intimacy.

Our special object here is to note some important points in which much of the American portraiture which we have seen of late excels the average of English work of a presumably similar class. We have been struck, on comparing recent English portraiture by high-class artists with the portraiture under notice, to notice the cold, hard, flat effect which the former presented. Let us be understood: they were not cold, hard, or flat absolutely in themselves; they would, in fact, be regarded, both by photographers and the public, as fine pictures. The negatives had been carefully retouched, and the heads had fair modelling and texture; but it was the modelling of stone, the texture of marble, not of flesh; whilst the American pictures to which we refer have the texture and modelling of living flesh, which

would present a warm touch, and yield with a soft elasticity if the finger were pressed against it. There are English artists who recognize the necessity of preserving the suggestion of the natural texture and quality of objects; but, unfortunately, a great many fail to do so, in greater or less degree, especially in ordinary commercial work. In the last photographic exhibition we had examples of both kinds of work. In the pictorial work of Mr. Rejlander and Messrs. Robinson and Cherrill, in the portraiture of Mr. Blanchard, in the enamels of Mr. Mayland, and in some other admirable contributions, the quality to which we refer was present. It is not necessary to refer to special examples of its absence. We refer to the unsatisfactory fact in general terms simply to suggest to all portraitists a more careful consideration of the subject. At one time there was a demand on the part of the public for flat, white faces, and photographers met that demand the more readily because the hard lighting, full exposure, and much intensifying, removed many blemishes which would otherwise have been offensively prominent. Many of those who undertake the retouching of negatives seem to aim at a similar standard. They produce a smooth, white face, with little of texture, shadow, or modelling. One of the really valuable elements of the practice of retouching is found in the fact that it permits soft lighting and the use of thin negatives, giving full texture and modelling, the pencil of the retoucher removing those defects which the thin negative would otherwise render too apparent.

Another advantage of the soft lighting and thin negatives to which we are referring is the beauty with which it permits the rendering of light draperies, white hair, &c. In some of the noble heads before us by Mr. Mosher we have admirable illustrations of these points. Silky grey hair, in which every single hair is defined, without interfering in the slightest degree with the massing of the waving locks. Shirt collars and fronts, too often a chalky patch, distracting the attention from the face, are here low in tone, with every curve, fold, and wrinkle duly rendered, reminding us of Ruskin's dictum, to the effect that not even the space of a pin's head in any natural object will be found without some degree of gradation. The light draperies of ladies—whether of silk, muslin, tulle, lace, or other fabric—receive the same justice. Whilst we are indebted to Mr. Mosher for a series of admirable photographs of noble and attractive heads, we shall be glad if some of our readers gain hints and suggestions, not because their work is necessarily bad to begin with, but because there is better work to be done than some of them at this moment are producing.

Some recent examples of the work of Kirtz, Sarony, Notman, Inglis, and others, all point to the same conclusion—admirable lighting with plenty of shadow: thin negatives, and a large, judicious style of retouching, which preserves the luscious soft texture of living flesh, instead of the minute, over-elaborated texture of marble, are present in all. Cabinets appear to be the prevailing size, and large heads the prevailing style. They are for the most part printed in oval medallion, with a tinted margin to the medallion. In some the margin, instead of having a plain tint, have a diaper design, and in some a fine delicate veining similar to white marble, and this, by its suggestion of hardness and polish, gives additional value to the quality of the flesh texture. In almost every instance they appear to have been finished by the aid of Weston's burnisher, the enamel-like surface it communicates materially aiding the effect of detail on the pictures.

## THE COLLODIO-CHLORIDE OF SILVER PROCESS.

THE recent interesting papers by Mr. Bruce and Mr. Hooper on the collodio-chloride process, and the very beautiful examples of results exhibited as produced by its aid, have brought us many communications on the

\* A capital little work by Mr. Mosher is entitled "Half-an-hour's Chat with My Friends." We shall have something to say about it shortly.



subject, asking if no English manufacturer will undertake a similar branch of trade to that pursued by Obernetter and others with advantage on the Continent. It will be obvious to correspondents that the discussion of commercial enterprise in such matters is beyond our province. That ready facilities for purchasing the collodio-chloride paper ready for use would be a boon in many instances there cannot be a doubt. The beauty of the pictures cannot be questioned, nor have we ever heard of a case in which their superiority in permanency has been denied by any one who has worked the process, or even tested it, the allegations as to lack of permanency having been chiefly based upon anonymous gossip or untrustworthy hearsay. As to the absolute permanency of the results of the process, a period of longer than ten years will be necessary to determine; and in fact, it is doubtful whether absolute permanency can ever be predicated with certainty of any image produced by the salts of silver, nor indeed of the results of any process imperfectly or carelessly worked. But we have collodio-chloride prints in our possession, both on paper and glass, which we produced, before the process was known to anyone but ourselves, in 1864, which are now quite unchanged.

The chief difficulty in the commercial application of the process is the trouble entailed by preparing the paper. If ready prepared paper of good quality were easily accessible, there is little doubt that it would be much more extensively used. We have been favoured by Mr. Inglis, of Montreal, with some exceedingly charming examples of his portraiture printed on collodio-chloride paper prepared by himself. He remarks that the "soft richness of collodio-chloride prints" is, in his opinion, "very far superior to anything obtainable upon albumenized paper." His difficulty is in carrying out the process on a large scale with all the paper to prepare in his own establishment. He says:—"Where two or three hundred cards per day only are required, the process can be managed well; but where from a thousand to fifteen hundred prints a day have to be got through, it is difficult to do the work and prepare the paper." Nothing can exceed the neatness and delicacy of the examples we have received from Mr. Inglis, and we can well understand his regrets that better facilities do not exist for introducing the thing easily on a commercial scale.

Mr. Faulkner writes in a similar strain. After some compliments, which we shall not quote, on the boon which he thinks we "so generously conferred on the photographic world," he proceeds to details. He says:—"Should you require at any time illustrations of the superior permanency of collodio-chloride pictures over ordinary silver prints, I shall be happy to supply some. In a frame consisting of upwards of forty pictures, which I exhibited at Conduit Street four years ago, in the centre is a collodio-chloride, printed nine years ago. All the ordinary silver prints were printed carefully, and toned to the collodio-chloride print as a standard. All the ordinary prints have faded more or less, but the collodio-chloride print retains even the fine bloom which it, in common with silver prints, possessed at first." Other communications have a similar tendency.

We have been favoured with a note from Mr. J. W. Swan, on the subject of the addition of citric acid to the collodio-chloride as an aid to additional vigour in the image, the first use of which we recently accredited to Mr. Bovey. Mr. Swan, who has, from the time of our publication of the process, given it considerable attention, and has, we believe, continued since then to manufacture the emulsion, reminds us of his early use of citric acid, and his communication to us upon the subject. Without the slightest desire to deprive Mr. Bovey of the credit, he asks us if any record of the use of this acid in connection with the emulsion exists anterior to his (Mr. Swan's) intimation to us. At this distance of time, upwards of nine years, we feel it difficult to say absolutely which commu-

nication reached us first. In our early experiments increase of vigour chiefly depended on the use of excess of nitrate of silver in the emulsion, which when used on opal glass involved some inconveniences, which we described. So far as our memory serves us, both Mr. Swan and Mr. Bovey suggested the use of citric acid independently, but which was first we cannot, without minute reference, determine. We may add, that Mr. Swan certainly first tried the result of developing a slightly exposed collodio-chloride print, and, we believe, first used the emulsion for reproducing negatives.

To the amusement, rather than the surprise, of his readers, our British contemporary indulges in his periodical protest as to the origin of the process, and with hysterical energy denies our claims to its discovery, which he, as usual, attributes to M. Gaudin. Of course, we have no intention of entering into any discussion on the subject, M. Gaudin having himself disclaimed the matter, and assured us that after he had suggested it, amongst other emulsion processes, he was unable to succeed in putting it into practice. As a correspondent points out on another page, no one has yet undertaken to say that he had either seen or heard of a collodio-chloride print until we published our process. Our contemporary states that he has before denied our claims: it is but justice to him to say that he has done so, and it is a little hard upon him that as he has done so, often and energetically, no one believes him, and no single photographer of reputation or position has ever been found to endorse his assertions. His form of assertion reminds us of that of Dogberry—"Masters, it is proved already, . . . and it will go near to be thought so, shortly."

#### SIMPLE METHOD OF PRECIPITATING SILVER.

AMONGST the various methods of precipitating silver from waste solutions, none is more simple, and, for some purposes, none more efficient, than the plan of placing strips of copper or zinc in the solution, which gradually precipitates the whole of the silver in solution as a black metallic powder, ready for conversion, by means of dilute nitric acid, into nitrate of silver. For transforming old and contaminated nitrate baths into pure nitrate, and so securing a new, pure bath, nothing can be simpler, easier, or better; and in many cases such a course is, doubtless, better than prolonged attempts to restore working qualities by means of doctoring. One probable reason why many photographers do not attempt methods of precipitating of this kind is the fact that they have not the facilities in the shape of strips of pure zinc or copper at hand. Our American friends, ever ready in ingenious methods of supplying wants, and so creating trade, have already devised means to meet this desideratum, and we find an article in an American contemporary describing the "metallic precipitating bars," which have just been introduced into commerce there. A demonstration by the "inventor" is described. "A portion of a disordered bath was furnished, and into it was put one of his metal bars. In a very few minutes the silver was all precipitated in metallic form; a small quantity of hydrochloric acid was then added to dissolve any small pieces of zinc which might have become detached. The precipitated silver was then worked in a few changes of water, and immediately dissolved with nitric acid. The result was a solution of perfectly pure silver. This mode of treating disordered baths has been adopted by some of our most experienced photographers: all who have tried it have been highly gratified with the result. To still further simplify the process, we have had manufactured a quantity of these metallic bars, bent in the form of a U, of half an inch in thickness. This will obviate the necessity of adding any acid after the silver is precipitated to dissolve any metal which might have become detached, as was frequently the case when thin sheet zinc was used. All that is necessary with one of these bars to purify your



bath, is to place the bath in a suitable vessel, put the bar into it, with a string attached for convenience of removing it. In twenty or thirty minutes the silver will be all precipitated; not one grain need be lost. Two or three washings, and dissolving with nitric acid, reducing to the strength you require with distilled water."

Probably many photographers will not find it difficult to provide themselves with convenient bars by means of application to any worker in zinc; and probably some of our dealers may find it worth while to keep a stock of such things for supply to their customers. Suitable bars of a U shape will, doubtless, materially facilitate the operation of precipitating silver in this way. The dark metallic powder should always be washed in one or two changes of dilute sulphuric acid, to remove all traces of zinc, and afterwards in two or three changes of clean water, one of which may be warm, to remove the sulphate of zinc, before dissolving the precipitate in nitric acid to obtain the pure salt for a new bath.

The same method is applicable to the reduction of chloride of silver and old hyposulphite solutions; but in such case the precipitation is slower, and may be materially aided by connecting the bars with a galvanic battery. For such mode of reduction Mr. F. Hart's apparatus is admirably adapted.

#### ELIMINATING HYPOSULPHITE BY MEANS OF ACETATE OF LEAD.

THE use of acetate of lead for eliminating hyposulphite from washed prints has been again under discussion at a recent meeting of the Photographic Section of the American Institute. Mr. H. J. Newton, who was in the chair, protested against the report recently published as that of a committee of the German Photographic Association of New York. The report, which we published some weeks ago, stated that prints treated with the acetate of lead had, after twelve months' keeping, faded and turned yellow; whilst other simply washed prints, produced at the same time, had retained their pristine brilliancy. Mr. Newton is not satisfied that the prints upon which this report is based were really those experimented upon by the committee, and, as the subject is of considerable interest and importance, we give the same publicity to his protest as we did to the report. He says:—

"It does not appear from this report that these were the same prints that were cleaned by the committee. The secretary did something afterwards, and exhibits those as faded prints. I had used this process for several years before I published the article, so as to be perfectly sure that I should not lead any one into trouble. I make nothing out of photography—what I give to the photographic fraternity is perfectly gratuitous—and I was desirous that others should test it at that time, and made a pretty emphatic request in that paper that they should report, so that we all might have the benefit of their experience. Eight or nine months after that, there were some pictures sent to Mr. H. T. Anthony by a photographer in Massachusetts, who, as soon as the article was published, prepared some prints in both ways, put them in a show-case, where they would be subjected to the direct sunlight for a large part of the time, and those were sent to me, through Mr. Anthony, after they had been so exposed for seven or eight months to the light of the sun and the action of the weather; and the one cleaned with the lead never changed one particle, and has not to this day, although it has been in my possession for two years; while the one that was fixed and washed in the ordinary way turned yellow. That is a case that runs exactly counter to the report of this secretary—for it is not the report of a committee, but the report of the secretary of a society, who was chairman of the committee at the time."

Mr. Newton gave the successful experience of others who have used the lead salt, and showed various prints

which, having been treated with it three years ago, were free from any signs of change. We have often pointed out that however perfect the washing may be, it will not prevent the fading of prints in which the elements of change have been planted by imperfect or careless fixation; and Mr. Newton echoes this opinion. He observes:—"A print may be perfectly cleaned from hyposulphite, and yet fade. Fix a print in hyposulphite used four or five times, and, I don't care how much you wash it and clean it, it will fade."

Mr. Chisholm and others gave testimony in favour of the lead treatment, thus confirming the evidence of various correspondents in our own pages.

#### COLOURING PHOTOGRAPHS.

A CORRESPONDENT of the *English Mechanic* gives some hints on colouring photographs; but commences by a protest against the practice of colouring photographs at all, and especially without the skill of a practised painter. For those who are anxious to make the attempt, he gives the following hints.

"Nearly, if not quite all the various colours used in painting may be made from the five colours, black, white, blue, red, and yellow. In the majority of cases, the following will be found sufficient, viz., carmine, Prussian blue, white, chrome yellow, gamboge for drapery; yellow ochre for the face, or all three; light red, indigo, burnt sienna, bistre or burnt umber. If in a colouring any part of a lady's or gentleman's apparel, it is found necessary to produce other tints and shades, the following combinations may be used—Orange: mix yellow with red, making it darker or lighter by using more or less red. Purple: this is made with Prussian blue, or indigo and red. Carmine and Prussian blue make the richest colour, which may be deepened in the shadows by a slight addition of indigo or brown-green. Prussian blue and gamboge make a fine green, which may be varied to suit the taste by larger portions of either, or by adding white, burnt sienna, indigo, and red, as the case may require. Brown may be made of different shades of umber, carmine, and lamp-black. Neutral tint is composed of indigo and lamp-black. Crimson: mix carmine and white, deepening in the shaded parts of the picture with more carmine. Flesh-colour: the most like is light red, brightened in the more glowing parts with carmine, softened off in the lighter portions with white, and shaded with purple and burnt sienna. Lead colour: mix indigo and white to suit. Scarlet: carmine and light red. For jewellery, cups of gold and silver preparations may be procured.

"In colouring pictures the principal shades of the head are to be made with bistre mixed with burnt sienna, touching some places with a mixture of carmine and indigo. The flesh tints are produced by the use of light red, deepened towards the shaded parts with yellow ochre, blue, and carmine mixed with indigo, while the warmer or more highly coloured parts have a slight excess of carmine or lake. Colour the shades about the mouth and neck with yellow ochre, blue, and a very little carmine, brightening the colour of the lips with carmine and light red, letting the light red predominate on the upper, and the carmine on the lower lip; the shades in the corner of the mouth being touched slightly with burnt sienna mixed with carmine. In colouring the eyes be guided by nature, observing a very delicate touch in laying on the colours, so as to preserve as much transparency as possible. A slight touch of blue—ultramarine would be best—in the whites of the eyes near the iris will produce a good effect. In colouring the hands of men it will be necessary to use the darker tints with more freedom according to the complexion of the sitter. For women the warmer tints should predominate, and in order to give that transparency so universal with the softer sex, and which gives so much loveliness and beauty to the face, a little white may be intermingled with



he red tints about the lighter portions of the face. The roots of the hair at the forehead should also be touched with blue, and the eyebrows near the temples made of a pinkish tint. The chin of a woman is nearly of the same colour as the cheeks in the more glowing parts. In men it is stronger and of a bluish tint, in order to produce the effect given by the beard. In portraits of women the middle tints on the side of the light, which are perceived on the bosom and arms, are made of a slight mixture of ochre, blue and lake (or carmine), to which add, on the shaded sides, ochre, bistre, and purple; the latter in the darker parts. The tints of the hands should be made the same as the other parts of the flesh, the ends of the fingers being a little pinkish, and the nails of a violet hue. If any portion of the fleshy parts is shaded by portions of the dress, or by the position of the hand, this shade should be coloured with umber mixed with purple. To colour the drapery—Violet velvet: use the purple made of Prussian blue and carmine, touching up the shaded parts with indigo blue. Green velvet: mix Prussian blue and red orpiment, shade with purple, and touch up the lights with a little white. Red velvet: mix a little brown with carmine, shading with purple, marking the light in the strongest parts with pure carmine, and touch the most brilliant slightly with white. White feathers may be improved by delicately touching the shaded parts with a little blue mixed with white. White muslin, linen, lace, satin, silk, &c., may also be coloured in the same way, being careful not to lay on the colour too heavily. In selecting brushes, choose those susceptible of a fine point, which may be ascertained by wetting them between the lips, or in a glass of water."

#### ON THE STABILITY OF COLLODION FILMS.

BY DR. H. VOGEL.

I HAVE made a series of trials on the influence of quality and quantity of cotton, of development, fixing solutions, varnishes, preliminary coatings of plates, &c., on the stability of films, in the interest of the forthcoming observations of the transit of Venus, and I give here a short account of my results, which may be, perhaps, of some benefit to the observers. The details of my experiments may follow in the next.

The contraction of films depends very much on the quality of cotton. The cotton which delivers a thick collodion and tenacious film generally contracts much. I have tried different cottons, and found that the contraction was the least in the "celloidin" cotton of Schering, Berlin. This is the best for astronomical purposes. The contraction depends upon the quantity of cotton in the collodion. The contraction is diminished in a remarkable degree by dilution with alcohol and ether. The collodion of Maun, St. Petersburg, with two per cent. of cotton, gives a contraction of  $\frac{1}{3000}$ ; diluted with half its volume of alcohol and ether, it shows no further remarkable contraction.

3. The adhesion of the film on the glass is of great influence. If on any part the film loosen the glass during washing or the film is injured a little, there is a tendency to contraction or variation of the preliminary dimensions. Therefore it is necessary to work on plates with a preliminary coating of albumen or india-rubber. On such coating the film does not loose the surface, and even a little damage is without influence. Only albumen dry processes do not want any preliminary coating, because the films with the albumen preservative are very stable.

4. All preparations which induce the film to loose the surface (as gums) are of bad influence.

5. Acid pyro development induces strong contraction of the film if it lays on plain glass; but not on albumen plates or plates coated with india-rubber, if sufficiently exposed. Under-exposed plates, very long developed, change in a remarkable manner.

6. Alkaline development gives no tendency to contraction.

7. Dry plates are more stable than wet plates. The

best results I got with albumen plates (Fothergill) and with morphine plates on preliminary coating with india-rubber.

8. Some varnishes change the dimensions of films: mastic varnishes the least. The experiments in this direction are still continued. One sample of varnish (Beseler varnish, made in Berlin) gives no change at all.

9. Fixing is of no influence on the dimension of films if there are not bodies like gums, which induce blisters.

For coating plates with india-rubber I dissolved one grain rubber in one hundred grains chloroform, separated the clear portion of the whole after three days, diluted with ten volumes pure volatile benzole, and filtered. The plates are washed, dried, brushed, and coated with the rubber solution in the ordinary manner.

#### RECOVERING SILVER FROM WASTES.

BY JEN. BARDWELL.\*

IN 1855 and 56, I was engaged in working the dry plate process—and you recollect, in those days, we made very intense negatives with perfectly opaque skies—using the honey, gelatine, and other processes, and the manner in which we worked wasted an awful quantity of silver solution in the developments. I used to develop my plates of an evening, and used a large tray to catch the waste and slop; and in the morning, after having developed several whole plates, would find quite a quantity of silver precipitated, which, after pouring off the spent developing solution, would remain on the bottom of the tray. This, of course, set me thinking, and I commenced from that time to save my waste washing, &c., using my developing solutions for that purpose, pyrogallie and gallic acid, iron and the sulphides, until about the year 1859 and 60, when I found a much more satisfactory way of doing it, so much to my satisfaction that I have had the method in constant use ever since. It is easy of application, cheap, has no bad odour, and requires very little attention, and is, in fact, the *ne plus ultra* of silver saving apparatus. I might have had it patented, perhaps could now, and, in fact, I am sure I could if the same rule would hold good in my case as in others.

However, to the description. The first thing required is a keg holding (say) fifteen to twenty gallons for small galleries, and larger, or, perhaps, better, two or three of them, and in very large establishments, barrels should be used. These kegs should have faucets set in about one-third the distance from the bottom, and a large hole cut in the head for pouring into it the washing waters, &c. These kegs are then to be filled with scrap zinc (which can be got of any tinman cheap). The zinc should be cut in the strips and slightly bent or twisted, to prevent the pieces from laying too close together, and the kegs should be filled to the top with these pieces, and are then ready for use. We will say, for instance, there are two of these kegs. After printing the prints are washed; this washing water is poured into the keg, also the hypo, after having fixed the prints, and, in fact, any solution containing silver may be poured in, in the same manner, until the keg is full; then commence with the second. Three kegs will not be required unless you fill one a day, and when it is full, empty the first by the faucet (provided it has stood at least two days) into a vessel, so that the precipitate that will fall from the zinc in drawing off the liquid may be saved. The precipitate will be saved in any manner most convenient. This is all that is required, but observe not to pour any acid mixture on the zinc (this does not apply to the washing waters containing acetic acid).

The zinc will last a long time, but when it does waste and settle, keep it filled up with fresh strips. In my practice, after collecting the precipitate, it should be well washed, to free it as far as possible from hypo, salt, or any soluble matter that may be retained by it, and then dried.

\* *Anthony's Photographic Bulletin.*



I now take a large iron ladle and put into it some of the dried precipitate, and roast it to a red heat, which will drive off and consume considerable sulphur and zinc, and make the reduction more easy. When at a red heat you will notice at times coloured flames arising from it; continue the heat so long as they make their appearance, then empty the ladle and continue until you have it all roasted, then pulverise the roasted precipitate, and when cold mix with two parts of powdered saltpetre (pure), and proceed to reduce to a metallic state by the Hadow method. This, in connection with the method of reducing, may seem complicated in print, but in practice is of very little trouble, and will save many a dollar to him who works it.

### A WORD FOR OUR PROFESSION.

BY W. HEIGHWAY.\*

THAT it is a branch of the fine arts, is the honourable boast of those of our number who have a love for their work, and ambition above the sordid consideration of dollars and cents; but there are by far too many who have no just conception of or care for the higher claims of art, and tinkering along a daily routine of careless, botchy work, merely regarding it as a trade by which they can subsist with less labour than by following heavier trades, for which they might be better adapted. No wonder, then, with so many of these evidences of perverted skill (?) constantly before them, that the public misjudge the merits of our beautiful art, and degrade it to the level claimed by this miserable mediocrity.

It may be urged by some that this objection is a very fanciful one—that it matters little what is thought of us by the public, so long as they come to us as sitters, and pay their money. Individuals advancing such an opinion take to themselves credit for a great deal of philosophy, that they are able to take such a high and independent ground. But, in reality, is it not rather grovelling than noble, and is it not our duty to strive to gain the good opinion of the world in an honest and manly way?

We should treat all our visitors in an uniformly courteous manner, not toadying to the rich and influential, and snubbing the poorer of our customers; adopting politeness and uniform attention to all, not as a policy that pays, but as a duty to ourselves as gentlemen. That you will reap a benefit from it, there is no doubt, and, in addition to this pecuniary advantage, you raise the tone of your business, and tend to an advancement of the profession.

Not one of the less active of the causes of the low estimate the public take of photography as a profession, is to be found in the constant parading of vulgar jealousies; that public washing of dirty linen, alas! too common amongst us. Let us never fail to speak with the greatest possible respect of our competitors and their work. Instead of petty sneers and insinuations of ugly things, which are mean and contemptible, let us speak of our rivals as we would they should speak of us. Our listeners can discriminate between the utterances of jealousy and the expression of fair and honest criticism; and the eulumniator, believe me, does not benefit himself, but only brings discredit on the profession. A little more politeness and charity, and a little less jealousy, would tend greatly to our advancement in the respect of the public.

The time has come when our profession depends on the highest order of culture, thought, and art knowledge, for our customers are becoming more and more enlightened in art matters every day, and bring fine discriminating powers to bear in judgment of our work. It is necessary for us to be ahead of them, or we shall find ourselves deserted of all our friends; while we shall see Mr. Jones, across the way, who does keep up with the times, who does think and act on his artistic knowledge, and is of gentlemanly deportment, has his gallery filled with satisfied patrons.

\* Philadelphia Photographer.

Read the journals devoted to photography. You may not be able to see how much you gain by it; you may even doubt if you have gained a single "wrinkle;" and perhaps you may believe you know more than the editor and all his staff put together. But even in this unpleasant state of mind, read. Read all this "trash and nonsense;" it tends to elevate the mind, and in that way, if in no other, it does you good.

### Correspondence.

#### THE GELATINO PELLICLE.

DEAR SIR,—Dr. Nicol has expressed his surprise, in a contemporary journal, that so little has been heard of late respecting the new pellicle; and Mr. Kennett has again invited those who have tried his preparation to give the result of their experience, whether successful or otherwise. As nearly three hundred photographers have been supplied with the preparation, I suppose each one is waiting for his neighbour to begin. Having assisted at the birth of young pellicle, and even been assured by his anxious parent that I stood in the position of godfather to the promising youth, I naturally feel interested in his advancement, and hasten to relate what I know about him.

My first experiments were by no means successful. Knowing the extreme sensitiveness of the preparation, I drew the curtain in front of my dark room window; and lighting a mere spark of gas, shaded by an orange-coloured glass globe, I proceeded to coat the plates. When I had got through this, and laid them carefully on a flat table, I left the room for a few minutes for some purpose—only to find upon my return that my assistant had turned up the gas; as he observed, he wanted to see—that was all. Unfortunately, it was not quite all, as the plates had seen the light also: in fact, the whole batch was spoiled. The first three or four we tried we could get no image at all; and after that, the rest were faint or fogged.

One of my early mistakes was in pouring the emulsion on the plates without warming them, causing the film to dry unevenly; the next was over-exposure. Following the formula for dry work, I gave about half as long again as for the ordinary collodion process (for the inventor had no idea at this time of the great rapidity of his plates). The exposure was really about ten times as long as it should have been. In both these cases I was misled: in one, by the directions; in the other, by the want of them. As Mr. Kennett is to read a paper on the subject at the next meeting of the London Photographic Society, I hope he will favour the photographic community with the most minute particulars; starting with the idea that the larger portion of his audience know absolutely nothing of the gelatine process, which differs in many respects from the ordinary collodion work—and where, from the extreme sensitiveness of the material, the least error may be fatal to the work. A new set of directions is wanted. By perseverance I succeeded in overcoming the principal difficulties.

All who have seen the specimens exhibited must have admired the fineness of the film and clearness of the image—"Chiare, fresche, e dolci," as Petrarch expresses it. The extreme rapidity also must be manifest to those who have persevered so far as to obtain a perfect image. In the fraction of a second required to flash a light upon the negative and prepared plate, I have obtained by contact printing a perfectly exposed transparency; even by gaslight I found three or four seconds sufficient. With regard to the exposure for negatives out of doors, this extreme rapidity is manifest enough.

I must here state that my experience in working other dry plates is very small indeed, and that of the most recent date. "Comparisons," as the learned Dogberry assures us, "are odorous;" and it may appear invidious to compare the pellicle plates with those of another sort; however, it is only by doing so that we are enabled to judge of their different qualities and degrees of excellence. The only other dry plates that I have seen in use were some half-dozen of Colonel Wortley's 10 by 8 size, prepared by the Colonel himself, and exposed by Mr. Crawshaw and Mr. H. P. Robinson, when upon a recent occasion I partook, in company with yourself, the generous hospitality of Cyfarthfa Castle. The plates were exposed in the fresh mountain air of Talybont—time from thirty-five to fifty-five seconds. Upon being developed next day, they were found to be slightly under-exposed; those that had the longest time being the best. Of course, with my limited experience, I do not give this as the average of a Wortley plate: I merely speak of what I saw. The weather, too, as you will



probably remember, was heavy, and the clouds charged with rain, of which we had soaking proofs before we reached home. I believe, however, that with the pellicle plates used under the same conditions an exposure of four or five seconds would have sufficed.

I will not further take up your valuable space. Those who have succeeded will require no encouragement to perseverance: to those who have not succeeded, I would quote the little song, familiar to most of us in our juvenile days, and if they "find the task is hard," I certainly advise them to "try, try again." They will have some difficulties to encounter, especially in keeping light from the plates; but I believe, in the end, they will be rewarded by the results. Fortunately, they can do this at a very small cost. Mr. Kennett has been advised by his friends (myself included) to raise the price of his preparation to something like a level with that of his predecessors; but, although out of pocket by his invention, he has not done so. I hope, therefore, the qualities of young pellicle will be amply tested during the short interval of fine weather which we in England have agreed to call summer.—Yours truly,

R. W. ALDRIDGE.

221, Cornwall Road, Notting Hill, W.

### MAGIC LANTERN IMPEDIMENTA.

DEAR SIR,—It seems that Mr. Nicol has taken the Scottish motto, "Nemo me impune lacessit," as his maxim, and, under the pretence of a fatherly solicitude for the pockets of your readers, attempted to requite me for upsetting his hobby. But he has laid about him in so random a manner, that his blows have all fallen upon his friend Mr. A. He places himself in a false position when he judges and condemns that with the first principles of which he does not appear to be acquainted. He has misquoted the passage in my article of April 17th, concerning the blue glass, which was intended to be quite supplementary, and only to be used when required; nature offering green as the colour most suitable to afford repose to the weakened sight of the invalid or over-tasked worker. The trial papers I sent you show that light green glass permits more light to pass through it than orange.

Taking the ounce as the unit of weight and measure, the quantity of water I stated in reply to "Oxygen" will be found correct, whether it is subdivided by the standard pint of sixteen ounces, or the imperial of twenty ounces. I find that this duality of measures gives an opening to a practice of which it may benefit your readers to be made aware. Retailers make a practice of buying by the latter and selling by the former; and I find that the gallon jar is not made of any greater capacity than it used to be.

I freely accept Mr. Nicol's proffered hand, and he must please to consider himself hobbled-nobbed with spirit whiskey or a cnp o' barley brew in right old Gaelic (or, should he be a brother of the craft, in true Masonic) style; and I hope to see his name in the PHOTOGRAPHIC NEWS coupled with some subject worthy of his talents and position, and that there will be no need to caution your correspondents, in the words of Burns—

' If there's a hole in a' your coats,  
I rede ye tent it;  
A chiel's amang you takin' notes,  
An' faith he'll prent it."

A little brush, as Mr. Nicol terms it, is only robust exercise to an athlete; but mere wrangling is out of place in an educational work like the present. The fear of being involved in a wordy warfare, or incurring the risk of unmerited castigation, too frequently prevents a timid mind from offering ideas which might prove highly beneficial to the public.

It does not appear that any progress has been made towards the accomplishment of the object desired: the ingenious duplex automatic gasometer of Leo would, I expect, prove too bulky to be portable, and to maintain pressure, water would, I suppose, have to be poured occasionally into the upper compartment. To those of your readers unaccustomed to the use of gas, the following hints may prove useful. Safety in a great measure depends upon a sufficient and continuous pressure being maintained upon the gasometer or bag during the consumption of the gas, and it must be perfectly under the control of the exhibitor. No increase in size of the bore of the jet will supply the want of this, but rather increase danger. Beyond a certain degree, pressure should not be exceeded, as this would only cause a useless waste of gas. When making gas, reject a close stove, and use a common open fire grate in preference.—Yours truly,

JAMES MARTIN.

5, Clarence Place, Ilfracombe, June 2nd.

### THE COLLODIO-CHLORIDE PROCESS.

SIR,—A recent letter in the Liverpool journal, signed "A. L. Henderson," laments that Mr. Hooper did not think it worth while to make himself acquainted with the history of the collodio-chloride process before reading a paper on the subject. Those who live in glass houses should not throw stones. Mr. Henderson's name is notorious amongst photographers for two or three things, none of which qualify him for throwing stones with advantage. Whenever anything new or beautiful has been introduced to photographers, he has been among the first to detract the claims of the process or its inventor. He has himself claimed a process of enamelling, the suspicious originality of which has prevented him from securing it by patent, but the secret of which he has preserved carefully, after in vain trying to sell it for a thousand pounds. He has claimed, as a novelty, adding nitrate of baryta to the silver bath, a thing which had been proposed publicly many years prior, and the efficacy and results of which, as claimed by him, have been denied and disproved by men like Mr. Tunny and Dr. Nicol. Other points on record in his public career need not be mentioned now. Mr. Hooper is doubtless able to answer for himself; but being the most energetic of the opponents of the defeated requitists, of whom Mr. Henderson was one, he would probably have enough to do if he noticed every petty attack upon him. At any rate, he is manifestly better acquainted with the history of the collodio-chloride process than Mr. Henderson, who attributes it to two gentlemen who neither discovered it nor claimed it. The actual history of the process is too well known for discussion, and not one of the barking detractors of the discoverer has ventured to affirm that he ever either saw or heard of a collodio-chloride of silver picture until it was announced in your pages in 1864.—Yours truly,

FAIR PLAY.

### ON BURNISHING PHOTOGRAPHS.

SIR,—If you refer to the PHOTOGRAPHIC NEWS of August 29th, 1862, you will find in Answers to Correspondents that I sent you specimens of photographs wherein your state the finish is very excellent.

The said photographs were burnished by means of an iron roller drawing the photo. over a hardened steel plate, and the pressure regulated as desired. At that time I finished all my photographs by these means, but had to be careful to keep the photograph free from grit, or else it was marked, and required extra labour to produce the desired result. I merely write this so that you may see the new invention you commented on last week is very near related to an old one of

J. LOSH.

[In "Weston's Burnisher" the photograph is drawn over a rounded burnishing edge, which increases the effect, whilst it enormously decreases the risk of abrasion. But there doubtless appear some points of analogy in the initial idea of the two presses.—Ed.]

### Proceedings of Societies.

#### LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

The ordinary meeting of this association was held on Tuesday evening, the 26th ult., at No. 15, Oldhall Street, the Rev. H. J. PALMER in the chair.

The minutes of the previous meeting were read and passed.

In reference to the spoiling by the spirit varnish of some negatives taken by Mr. Bolton's process,

Mr. W. KEITH said that a second negative need never be lost from that cause, as, whenever it was found that the varnish attacked the film, or the plate happened to be dirty, it was only necessary to give the negative a coating of thin gum solution.

Mr. ATKINS said that he had used gum, and also albumen, with good effect.

Mr. KEITH then minutely described the capabilities and construction of Ross's new symmetrical lenses, and Mr. ATKINS handed round a pair of No. 3 for inspection. The lightness and portability of the lenses, and the fact that one flange (of about an inch and a half aperture) was sufficient for the whole series, was considered to be great inducements to their adoption by all field photographers, especially as, by merely changing the stop, different angles of view could be obtained.

Votes of thanks were passed to Mr. Keith, for his interesting information, and to Mr. W. Atkins, for his kindness in providing a room to hold the meeting, the usual meeting room at the Free Library being closed for cleaning.



A discussion took place as to the desirability of obtaining a meeting room where conveniences for experiments in developing and other illustrations in the working details of photography could be readily exhibited. The Secretary was requested to make inquiries and report to the next meeting.

An excursion to Rhydymwy, near Mold, was fixed for Wednesday, the 10th instant.

The meeting was shortly afterwards adjourned.

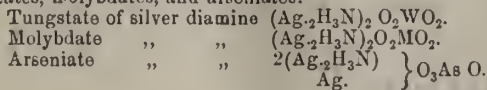
## Talk in the Studio.

**SOUTH LONDON PHOTOGRAPHIC SOCIETY.**—At the next meeting of this society, which will be held at the Rooms of the Society of Arts on Thursday, June 11th, a demonstration of the method of reproducing negatives by the Obernetter process will be shown.

**CHILDREN'S PORTRAITURE.**—We have received from Mr. Werge, Manager of the Children's Portrait Company, some charming examples of portrait studies of pretty little children, both groups and single figures. The "Three R's" are illustrated by a pretty, thoughtful child, engaged in the varied scholastic duties of reading, writing, and reckoning. Pastime is represented by the "Cat's Cradle" and other amusements. A nude study of a little boy with a flageolet represents "The Dawn of Music." The art conception and arrangement of each is excellent, and the photography perfect.

**PROGRESS OF PHOTOGRAPHIC ENAMELLING.**—We find in the *Investor's Guardian*, amongst the announcements of companies registered during the week, the "Photographic Enamelled Slate and Decorative Company," the number of shares being 4,000, at £10 each.

**ON SOME AMMONIACAL SALTS OF SILVER.**—M. O. Widman obtained the following salts by dissolving the silver salts in an excess of ammonia, and crystallizing the solution over a mixture of quick lime and sal ammoniac, or by saturating the salts with ammoniacal gas. The silver salts were obtained by precipitating a solution of nitrate of silver by the alkaline tungstates, molybdates, and arseniates.



—*Chemical News.*

## To Correspondents.

**N. F.**—Your failure arises from printing in diffused light. To get the soft, porcelain-like effect which distinguishes good "photo-mezzotints," it is necessary, no matter how thin the medium interposed between the sensitive paper and the negative, to print either in direct sunlight, or, failing that, to place the printing-frame in a box, the sides of which shall cut off all rays but those passing through the negative perpendicularly. Diffused light passing through the medium in every direction simply produces a blurred image, without any beauty whatever. 2. So far as we know, the Jacoby printing-frame has not been introduced into this country.

**A PRINTER.**—There is doubtless still room for experimenting with the collodio-chloride process with advantage. A tough, horny collodion produces the most glazed surface, and generally gives the most brilliant image; but, on the whole, we prefer a moderately powdery collodion, by the use of which many difficulties are avoided. We found on using chloride of calcium that five times its weight of nitrate of silver gave a good proportion. It is quite possible to produce pictures on opal glass with collodio-chloride without the addition of any organic substance, such as citric acid; but they are not so rich and vigorous as those produced by the aid of an organic salt of silver in the emulsion. We are not much addicted to whist playing, but we appreciate your allusion to those who, having tried to secure the trick, have failed, and lost, and to those who have secured the honours, and won.

**R. M.**—We are glad the lens you have obtained is so satisfactory. Mr. Robinson's *Lessons in Pictorial Effect* were republished in a volume at 7s. 6d., which is now out of print; but our Publisher expects to obtain a few copies shortly.

**D. S.**—The accidental dropping of a few drops of turpentine into the solution will not have spoiled your printing bath. 2. The cause of the yellow spots on the prints you forward is, without question, the bronze powder used in printing the name on the card.

**CAPLIN.**—It is not necessary to neutralize the chloride of gold in preparing a sulphocyanide toning bath. 2. The prints may be rinsed slightly, but need not be washed in using the sulphocyanide toning bath. The examples are a little over-toned. 3. We cannot tell.

**MEDIUM** asks our opinion upon a pretended "spirit photograph" which he encloses, and in which, as he points out, the sitter is lighted very definitely from one side, and the image called a spirit from the opposite side. Our opinion is that the photograph is an example of very impudent and very transparent imposture. An image of a female figure, with the flowing gauzy white drapery of a conventional ghost, has been impressed, probably by means of a transparency, on the same negative as the sitter. Such commonplace tricks can only impose on the most credulous. The example you send has nothing in common with the extraordinary results obtained by Mr. Beattie, and which we confess ourselves unable to explain. We will return the specimen.

**J. J. A.**—Photo-colligraphy will doubtless give you a ready means of obtaining reduced copies of drawings, the prints being similar in character to lithographs. We fear that it would be impossible, in this column, to give you anything like a resume of any of the photo-collographic processes; but as we have, since the first discovery of Herr Albert's process in 1869, given many articles fully explanatory of the principles and practice, both in the *News* and our *Year-Books*, you can have no difficulty in obtaining all the information desired. Should you find any difficulty in understanding the matter, we will help you when you state any specific difficulty.

**F. PARSONS.**—Received. We will test, and report. Several Correspondents in our next.

## METEOROLOGICAL REPORT FOR MAY.

BY WILLIAM HENRY WATSON.

Observations taken at Braystones, near Whitehaven, 36 feet above sea level.

Date.	Morning.	Noon.	Night.	Direction of Wind at 9 a.m.	
1	48°	49°	46°	S.E.	Fair and sunny all day.
2	49	50	43	S.S.E.	Fair and sunny all day.
3	48	48	42	E.	Heavy rain this evening.
4	42	46	44	E.S.E.	Rain a.m. and p.m.
5	48	50	46	E.S.E.	Fair all day. Gloomy.
6	46	51	44	S.	Rain showers a.m. and p.m.
7	44	50	44	S.W.	Rain showers a.m. and p.m.
8	48	50	44	S.	Fair and sunny all day.
9	46	49	42	S.W.	Rain showers a.m. and p.m.
10	48	50	42	N.	Fair all day. Sunny.
11	48	50	42	S.W.	Fair all day. Sunny.
12	46	50	48	N.	Fair all day. Gloomy.
13	47	54	48	S.E.	Rain p.m. Gloomy all day.
14	57	59	48	S.	Fair all day. Sunny.
15	—	—	41	S.	Fair all day. Gloomy.
16	41	55	43	S.S.W.	Fair all day. Gloomy.
17	43	60	46	W.	Fair all day. Sunny.
18	46	66	54	S.	Fair all day. Sunny.
19	50	—	51	S.	Fair all day. Sunny.
20	48	54	48	S.W.	Fair all day. Sunny.
21	45	53	49	W.	Fair all day. Sunny.
22	46	59	52	S.	Rain a.m. and p.m.
23	60	60	57	S.	Rain a.m.
24	59	69	54	W.S.W.	Rain this evening. Cloudy all day.
25	55	58	56	W.S.W.	Rain a.m. and p.m.
26	56	59	54	S.	Cloudy, but fair all day.
27	60	62	55	S.W.	A little rain this afternoon. Gloomy all day.
28	54	58	56	S.	Rain a.m. and p.m.
29	56	60	54	S.	Rain a.m. and p.m.
30	55	58	54	S.	Showers a.m. and p.m. Windy.
31	55	58	57	S.	Rain early this morning. Windy all day.

We arrive at the following from the above data:—

	Mornings.	Noons.	Nights.
Maximum temperature during the month	60°	66°	57°
Minimum ditto ditto	42	46	41
Mean ditto ditto	49.9	54.7	48.7
Number of days on which rain fell	...	...	15
Number of days on which no rain fell...	...	...	16
Number of fair days on which it was sunny	...	...	11
Number of fair days on which it was gloomy	...	...	5

Although the number of rainy days—or, rather, days on which rain fell—was considerable, yet the amount of rain was only 0.82 of an inch, while the evaporation amounted to 3.06 inches during the month.

Wind from S. and S.W. prevailed.

—*Chemical Laboratory, Braystones, June 1st.*



## The Photographic News, June 12, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

INTERNATIONAL SCIENTIFIC LIBRARY—RECREATIVE SCIENCE—  
LIMOGES ENAMELS—NEW MODELS FOR THE PHOTO-  
GRAPHER.

*International Scientific Library.*—A scheme has recently been started by a number of scientific men in this country, as also in France and Germany, to bring out a series of scientific works which shall appear simultaneously in the English, French, and German languages. Whenever an author of note in any of these countries contemplates publishing a work on a subject which may be deemed of sufficient importance, an endeavour will be made by the promoters of this plan to induce the writer to allow them to prepare translations of the book, so that it may be printed at the same time in London, Paris, and Berlin. The idea is certainly a good one, and, if only the subjects are well chosen, there cannot be a doubt of the success of the enterprise. Four volumes have already appeared, by Tyndal, Schmidt, Bain, and Bagehot, and we hear that one of the next works is to be from the pen of Dr. Vogel, on the subject of photography.

*Recreative Science.*—One may laugh as much as one likes, but it is a singular fact that the popular mind, as represented at fairs, races, and other gatherings of the sort, always takes kindly to science whenever presented in a tangible form. The capacity of your lungs, your lifting power, your weight, and the amount of electrical strain your nerves can undergo, are matters which the public are always anxious to learn about, if we may judge from the large patronage bestowed upon the investigators of these subjects. In like manner the travelling photographer has come to be regarded as quite a component part of all popular gatherings, and the smart outfit and brilliant apparatus used by some of the more well-to-do operators often secure for them unlimited custom. A shilling for a small glass positive, or half-a-crown for a group in a carriage at the races, leaves plenty of margin for profit, doing the work conscientiously. Indeed, there is quite a respectable class of peripatetic photographers now springing up, so well does this kind of enterprise pay. Lately, we came across a still further advance of science out of doors, in the shape of a green baize stand, upon which stood a valuable binocular microscope of handsome proportions, its bright brass work and shining lenses glittering in the sun. Twopence was the price charged for a peep through this wonderful instrument, and, doubtless, the amount of curiosity and love of the unknown, possessed by many to so marked a degree, would bring the learned microscopist costs of customers.

*Limoges Enamels.*—We have heard nothing lately of the revival of the enamel art at Limoges. As our readers are aware, Limoges enamels attained at one time a very great name, and collections of them at the present day are very valuable, by reason of their extreme beauty, as also from the fact that the art of making them has been entirely forgotten. Some time since, it may be remembered, the professor of chemistry at the Limoges College hit upon the happy idea of reviving the art again in conjunction with photography, and set about investigating the subject with the idea of blending the old with the new, and thus bringing back to Limoges the beautiful art for which it was once so famous. Although, however, a couple of years have now elapsed, no further steps appear to have been taken in the matter, and we fear that the difficulties to be overcome have proved too much for the good people of Limoges.

*New Models for the Photographer.*—There is a rare feat awaiting performance by some clever photographer who has pluck enough to attempt it. It is no less than to secure a picture in the camera of the great sturgeon which

now lies almost motionless in one of the tanks of the Brighton aquarium. Mr. Henry Lee, the well-known naturalist of that institution, assures us that the royal fish remains for hours in a state of perfect repose without moving a hair—or we should say, rather, turning a scale—the whole time. The tanks, being lighted from above, are most favourably illuminated for photographic purposes, and as, moreover, there is no visible current of water, there is really nothing to mar a long exposure. A gigantic pike inhabits a neighbouring tank, which might also serve as a photographer's model, we feel sure, for at times it affords a wonderful example of "still life." Submarine photography is no novelty, we are aware, for some time back an apparatus was devised for illuminating and photographing the bottom of the sea, although we never heard of the same being much used. At any rate, no monsters of the deep have yet been photographed alive, to our knowledge, and here, therefore, is an opportunity which should not be lost. It is a pity an instantaneous picture cannot be taken in the same way as Dr. Gayer photographs live animalculæ, placing a strong light behind the tiny creatures as they swim about, which actually shines through their transparent little bodies.

### RAIN WATER.

BY WILLIAM H. WATSON.

PURE water—oxide of hydrogen—is prepared from natural water by distillation. Water, however, as it exists in nature, is a much more complex substance, and as it has somewhat important relations to photographic art, some of your numerous readers may be interested by the conclusions arrived at from several of my analyses of rain collected under different circumstances. It will be seen that the quantity of solid matter contained in rain water is according to the purity of the atmosphere through which it has fallen: it being contaminated, near the sea, with sea salts, carried by the wind as spray; or in towns contaminated with sulphates, carbonic acid, ammonia, &c. With this view, it will be remembered, Dr. Angus Smith, some little time ago, proposed to form a climatology, and suggested a process for the examination of atmospheric air.

The purity of water is a matter which must not be overlooked in photography, especially in its application to the dry processes. In consideration of this subject we should look at the preservative, which may be done under two different lights:—

1. That in which it is desired to increase the sensitiveness of the film, from which all the nitrate of silver has previously been washed, as in the tobacco process, which I suggested to you a few weeks ago.

2. That in which it tends to act as a restrainer in a process where a considerable quantity of silver salts remain in the film.

Taking view No. 1, the first thing to be done is to wash the plate with water immediately it is removed from the bath, and afterwards to allow it to remain in the water for some time. If we use for this purpose water containing a considerable amount of solid matter, constituted to a great extent of chlorides, we have at once a chemical combination with the silver and the chlorine, forming chloride of silver, the chlorine having a greater chemical affinity for the silver than for the sodium or magnesium bases with which it was combined in the water. Or suppose the solid matter to contain much organic matter, the result is an organic salt of silver, which, being insoluble, will penetrate the film, there, very probably, to form a complex compound with the iodide, and afterwards to perform its injurious effect on the plate.

I will now refer to my note-book for the examination of the samples of rain.

*Sample No. 1.*—Rain fallen about a mile from the sea, in the country:—



Total solids	...	...	4.57 per 100,000 parts
Containing chlorides	...	...	1.47
Sulphates	...	...	0.96
Organic matter	...	...	0.21

Sample 2.—Rain fallen about fifty yards from the sea, and about one hundred and twenty yards above sea level:—

Total solids	...	...	17.10 per 100,000 parts
Containing chlorides	...	...	15.60
Sulphates	...	...	1.23
Organic matter (say)	...	...	0.26

Between samples 1 and 2 we note a difference of 12.53 solids and 14.13 chlorides.

Sample 3.—Rain fallen at Bolton-le-Moors:—

Solid matter	...	...	6.30 per 100,000 parts
Containing chlorides	...	...	2.00
Sulphates	...	...	1.83
Organic matter	...	...	0.70

It is a prevalent idea, I believe, suggested by Faraday, that snow is much more free from impurities than rain; and this may be easily understood if we consider that a flake of snow does not, as a drop of rain, come into contact with the atmosphere—only the outer portion. I append my analysis of a sample of snow fallen about a mile from the sea:—

Total solids	...	...	1.94 per 100,000 parts
Containing chlorides	...	...	0.96
Sulphates	...	...	0.40
Organic matter	...	...	0.10

#### MONTHLY SPIRIT OF THE JOURNALS.

BY W. H. DAVIES.\*

WHEN I undertook to bring together as an experiment, and at the request of the committee, a monthly spirit of the journals, I little thought of the trouble this would involve, and I can only hope that the next volunteer who takes it up may be able to give you at once a more practical and a more useful digest than I have done. I have necessarily left undone many of the things which ought to have been noticed; and in condensing these extracts I have been unable (through want of time mainly) to connect them as I would have liked; so you must take the will for the deed.

Aniline colours have been again recommended for the purpose of tinting photographs and photographic paper. I do not seriously object to their use, but remind those who wish to try that, when used as pigments on silver prints, they are the most unstable of all colours, as the folios of many a dealer in coloured photographs could show.

Mr. Carey Lea wishes to know what will remove the stains of alkaline pyrogallie acid development from the fingers. I think if he tries he will find that with warm water, tartaric acid freely applied with a brush will overcome his difficulty, followed by sand soap, or, still better, pumice and rubber sponge.

The melancholy position into which the London Photographic Society has drifted, and the quantity of leading articles and correspondence on the subject, induce me to suggest that if the parent society would adopt the rule that exists in ours, of one-third of the council retiring annually, and those being incapable of re-election for a year, their greatest difficulty would be overcome. A good addition to this might be a reduction of the number of their vice-presidents, and their removal by seniority in the same way. Whether a limitation of time should be applied to the holder of the president's chair is a more delicate question; but our rule of annual election, with the liberty of re-election, is a sound and a healthy one, and one that would obviate every difficulty. Of course, in a national society, proxies must be allowed, even although they are often made a wrong use of.

Mr. Gordon Ramsay suggests the use of three small

rubber umbrella rings on the corners of the triangle, to save scratching the bottom of the camera. I would like to ask him to fit these to the more usual circular tripod head, and he would find it difficult. These loose rings he would also find a nuisance if he lost or forgot one of them. Let him try my plan as shown to this society three or four years ago, of getting a groove cut in the solid iron or brass on the top, and therein inserting a strip of vulcanised rubber projecting all round slightly; he will then find that not only will he have secured his darling camera from scratching, but he will also find that the adhesiveness of the rubber has made his camera a great deal firmer and more rigid.

At the meeting of the Photographic Society of France, April 10th, M. Ferrand, member of the French Aeronautic Society, begged the P. S. of France to photograph a bird in the act of flight. The chairman said the thing was impossible; nothing but a blur could be got, which would teach nothing; but still the society could try the experiment, and he himself meant to try. Do so, Mr. Ferrier, and if you are as successful as our townsman, Mr. John Lennie, has been, you will have nothing to regret. His stereograph of the sea-shore with a flying gull was simply perfect; it was taken at least ten years ago.

A claim has been made by that careful experimentalist, Mr. Carey Lea, for an improvement in collodio-bromide plates, by the omission and the introduction of albumen into the preservative, and so forming an albumenate of silver in the film. Apart from chemical reasons, which have been dealt with by the Editors of the *British*, there are other good reasons why washing may be dispensed with, and albumenates of silver formed in the film. Assume an accurately balanced bromide emulsion without excess of nitrate, and all that is wanted to make the preservative flow easily is one of two things: either such a partial evaporation of the solvents of the collodion before dipping into the preservative bath as would allow easy covering and penetration by it of the film without decomposition, which, I think, may be easily managed; or, by adding, as I have done repeatedly, spirit of wine to the preservative (beer and albumen), or to any other containing albumen sufficient to allow the collodion and preservative to attach themselves to each other, and the thing is done; all that is wanted is to give time between coating the plate and applying the preservative. With such a preservative, which is of the nature of a varnish, it is well to use a little alcohol in the developer, to allow of more perfect penetration by the developing agents. On these and other grounds, I see every reason to hold that Mr. Lea is right as to dispensing with washing collodio-bromide films, and I only wait, not for more, but really for a little leisure to test and verify what I consider a great advance in dry plate work.

What has been said as to the throwing down of the albumen, &c., seems to me of little force, since I know by long past experiments that it is possible to combine albumen directly with collodion to the great advantage of the negative, the only requirement being the exposure of a large surface of albumen to an aqueous sample of collodion, combined with agitation and gentle heat; and with collodion so treated, no preservative whatever was required, the washing of the plate being sufficient to produce an admirable dry plate. Many other reasons, of course, might be adduced; I mention these only because they have not yet been noticed. The question of the formation of an albumenate of silver in the film seems to me to be an extremely easy one to solve, and one which has often been solved in the albuminous dry process.

The introduction of Ross's new symmetrical lenses calls for a word of notice. Has any one seen or got one of these lenses? From their description, they are made after the Steinheil fashion, but corrected for colour. One can't be always buying new lenses, some of which, after all, sometimes turn out no better than the old. My impression of these, from a

\* Read before the Edinburgh Photographic Society.



cursory examination of one of them, is, that the principle upon which they are constructed is good, and that they ought to supply a felt want. If, as stated, they give finer definition than the doublets introduced in 1864 by Mr. Ross, they will be fine indeed, for one of my best lenses is of that make, and I have not met its match, in any lens whatever, for that particular quality.

Weston's rotary burnisher has been mentioned, and I bring you a few prints to show the action of the instrument. I may mention that I think it frightfully dear. The burnisher itself seems to be made from chill-cast iron. It is said to be an alloy, not steel, and it looks more like chilled cast iron than anything else I know. The prints must be finished in the touching before being burnished, otherwise the touching shows very badly. The slightest speck of dust, also, is fatal to the effect.

Have any of our ardent experimentalists tried the dusting on blacklead process so fully described this last month? If so, we should like to see or hear of the results; but the same want of time I have referred to has prevented me trying it.

Matzner's developing process for albumenized prints was read before the Vienna Society. This, shortly stated, consists of silvering the paper by immersion in a silver bath which has been acidified with citric acid ten per cent., printing till the print is visible, then developed face down, by saturating it with distilled water—adding a lot of glacial acetic acid, and when quite wet, add saturated gallic acid, and, if necessary, a few drops of silver. Surely this is not such a discovery as to need the reward the inventor (save the mark!) wished the society to present to him for publishing it.

The agreeable French Correspondent of the NEWS, in speaking of the coagulation of dried albumen on paper, and of M. Thierry fils, of Bresles, having succeeded in accomplishing it by the addition of alcohol to the bath (no new addition), should know that this is a perfectly easy thing to do, and that to a certain extent it is done commercially. I brought before this society, a number of years ago, the method invented by Mr. Wood, of this city—viz., acting on the paper with steam in a closed chamber, varying times being used according as the albumen is wished to be more or less completely coagulated. I have made the albumenized surface so hard by this process, that the paper became quite waterproof, and have found it impossible to get the silver to adhere to or penetrate the surface. Some mechanical uses might be found for such paper, say for waterproofing the inside of dishes, &c. Photographic use it has none; but where the coagulation is less complete the surface is improved, the bath does not discolour, and the paper is in every way improved; but it is rather slow to tone. The ordinary double albumenized paper of commerce is prepared in this way for the first coating, the second being done in the ordinary way, by flotation, or in some cases by brushing very carefully to avoid bubbles; and in this way a very brilliant surface is produced.

Such are a few of the points I have thought worth noticing for discussion this evening, or for calling attention to in order that they may be tried, and, if found right, added to our stock of knowledge; and if found wanting, sent to the limbo of forgetfulness.

#### GERMAN CORRESPONDENCE.

THE TRANSIT OF VENUS—OBSERVATIONS ON THE CONTRACTION OF THE COLLODION FILM—COATING PLATES WITH INDIA-RUBBER—THE MORPHIA PROCESS—NEW ALBUMEN PAPER COMPANY.

BY DR. VOGEL.

The summer advances, and the nearer the term approaches for the great astronomical event of this year, the more zealous are the preparations carried on in all the civilized countries of the world for the proper observation of the same. Here

also trials for photographing the sun are in progress, and many a photographer who hears of it puts to himself the question, why are so many experiments necessary?—photographing the sun is an easy matter. This is very true; nothing is easier than taking a picture of the sun; but the matter assumes an entirely different aspect when a picture is to be made which admits of very exact measurement, for in this case the pictures themselves have to be mathematically correct, and most photographs are in this respect deficient. They cannot be mathematically correct, because (1) most lenses distort a little; (2) because the collodion film, by the developing, intensifying, drying, and varnishing processes, becomes somewhat changed, and the original picture is altered in its proportions. This change in the collodion film makes all measurement illusory, no matter how small it may be, for the question is to measure fractions of the seconds of an arc. If, for instance, we take the size of the whole sun, equal to 1800 seconds, and we take a picture of four inches diameter, then one second is equal to  $\frac{1}{1800}$  inch, but the intention is to measure  $\frac{1}{18}$  of a second =  $\frac{1}{18 \times 1800}$  inch. How is this possible if collodion contract  $\frac{1}{1000}$ , as Pashen has demonstrated, or, in other words, seven times as much as the size which is to be measured?

It is a question of the utmost importance to find a film which does not contract. Rutherford, the celebrated astronomer and photographer, has published also his observations on the contraction of the collodion film. According to him the matter is not as bad as represented; it amounted to only  $\frac{1}{1000}$ . This surprising discrepancy in the statements of Pashen and Rutherford induced me recently to investigate this subject myself, and I found that the contraction varies considerably with different samples of cotton. There are samples of cotton which contract very much, while others possess this quality in a lesser degree. I found that thick collodion contracts the most, while the limpid ones much less. Of all the kinds which I have tried, Schering's collodion-collodion contracted the least. The contraction varied also with one and the same sample, according to its concentration. The same collodion which, with two per cent. of pyroxyline, showed a contraction, did not show any with one and a-half per cent. If no celloidin is to be had, it will be necessary to employ a diluted collodion.

Fothergill's dry-plate process has been proposed for taking the pictures of the transit of Venus; it is said to furnish very stable films. The stability, however, is not due to the process, but is owing to the small amount of cotton present in the collodion; for the collodion which is employed in this process contains but 0.9 per cent. of pyroxyline.

Still another point exercises an influence—i.e., the addition of the film to the glass. When the film is very firm, the adhesion is slight; and when the adhesion is slight, there is danger of displacement. When, for instance, the film becomes detached from the corners of the glass during the washing, and water gets between the film and the glass, the former will become changed in shape. The same result follows when the film becomes in any part of it broken or perforated. Every means which increases the adhesion of the film to the glass lessens, also, the distortion, and *vice versa*. Hence, albumenizing the plates before collodionizing is beneficial, as well as coating with caoutchouc; while, on the other hand, gum substances, when placed upon the film, become detrimental, for these cause a raising of the film during development, and hence distortion; and it follows that all the dry-plate processes in which gum is used as a preservative are not suited for work of this kind. Those who desire to employ a dry-plate process should select one in which the preservative, after having been poured on, is washed off again—as, for instance, with albumen—or where the preservative is so much diluted that it cannot exert an injurious influence. Very suitable for this purpose is pure morphia (not acetate of morphia). One gramme of morphia, when boiled with



seventeen hundred and fifty grammes of water, yields a preservative which makes a washed iodide of silver plate very sensitive, without exercising any injurious influence on the stability. I have tried, further, to find out what influence an alkaline developer exercises on the film. It has often been stated that an alkaline developer loosens the film and causes contraction. This, however, takes place only when a gum is on the film; otherwise, the alkaline developer does not affect the film, and is even, in some respects, preferable to the acid developer; for when the collodion film is treated for a long time with pyrogallie acid, it will always contract, as is readily seen when we intensify with pyrogallie and silver solution. The alkaline developer is, of course, only suitable for certain plates (chloro-bromine process). The preparation of the plate is not a success in everybody's hands.

I hope that the hints which I have given in the above lines will not be too late for the Venns expedition. Perhaps they are important, also, for the preparation of all plates where exact measurements are necessary—as, for instance, the reproduction of cartoons, &c., &c.

I have spoken above of caoutchouc solution for coating plates, and will mention now how the solution is best prepared. One part of finely-cut india-rubber is dissolved in one hundred parts of chloroform. It takes two or three days until the solution is completed; one part remains undissolved, and floats on the top; the clear solution is drawn off with a glass tube, and is diluted with ten times its volume of pure and very volatile benzine. The solution is placed on the cleaned, dried, and dusted plate before coating the same with collodion. The plates may be kept for a month, in a place free from dust.

The morphia plates which I have mentioned above deserve particular attention on account of their sensitiveness. It is not at all difficult to make morphia plates which are nearly half as sensitive as wet plates, but the most curious part is its sensitiveness for colour. While ordinary bromo-iodide collodion plates are sensitive only as far as green (beginning from the violet of the spectrum), morphia plates show a sensitiveness which extends as far as the red and into it. This circumstance is of great importance for photographing the sun, for the edge of the sun emits relatively more reddish yellow and green rays than the centre, and with ordinary collodion the edge appears often under-exposed. Morphia plates, however, do not keep long; even after four days the sensitiveness begins to diminish. This has, of course, nothing to do with photographing the transit of Venus, as the day when it occurs is well known. The morphia process which I now practise is as follows:—

(a.) *Collodion.*

Bromide of cadmium	...	...	1 gramme
Iodide of cadmium	...	...	1 "
Alcohol	...	...	25 grammes

Filter, and dilute with three times the volume of plain collodion containing two per cent. of cotton.

(b.) *Nitrate Bath.*

Nitrate of silver...	...	100 parts
Water	...	1000 "
Iodide of potassium	...	1 part

(c.) *Morphia Solution.*

One gramme morphia boiled with 1750 cubic centimetres of water for one hour.

(d.) *Pyrogallie Solution.*

Pyrogallio	...	...	1 gramme
Alcohol	...	...	10 grammes

(e.) *Citrate of Silver Solution.*

Citric acid	...	...	1 part
Nitrate of silver...	...	...	1 "
Water	...	...	50 parts

(f.) *Fixing Solution* as usual.

The plate is collodionized and placed for at least three minutes into the silver bath; it is afterwards dipped in distilled water and well washed. It is next placed for three minutes into the morphia solution and dried.

For the purpose of development, the plate is placed into diluted pyrogallie solution.

Pyrogallie solution	...	...	1 part
Water	...	...	20 parts

The picture appears feebly; the plate is taken out and developed with pyrogallie, to which *very little* silver solution (c.) has been added. If the plate has been over-exposed it is advisable to take more silver solution. The development progresses very slowly; only, after all the details have appeared, more silver solution should be added to the intensifier.

In conclusion, I have to communicate to you some important news. The eight or ten different establishments of Dresden for the production of albumen paper have been consolidated, and form now one single albumen manufactory. The enterprise is a stock concern. We will in the future only have one source in Dresden from which we can obtain albumen paper, and the factory has only one competitor in Germany, namely, Trapp and Munch, in Friedberg (Hasse). It is said that the principal party which supplies plain paper (Blanchet freres in Rives) is interested in the undertaking. This event may become of great importance for photography. If a factory which furnishes such an important article as albumen paper has no competitor it will be able to dictate terms. There are, of course, other establishments outside of Germany which manufacture albumen paper, but none of them are so extensive as those of Dresden. Of the fifteen hundred reams of paper manufactured weekly by Blanchet freres in Rives, one thousand went to Dresden for the purpose of being albumenized; the balance was distributed through the other states. At present we have, besides Blanchet, only one factory where plain paper is made, namely, the one of Steinbach in Malmedy, where the Saxe paper is made. So far this paper has been considered inferior to the Rives paper; perhaps the new arrangement will give an impulse to his establishment, for I should feel very sorry if we were dependent on one establishment for the supply of plain paper.—*Philadelphia Photographer*

ON AN IMPROVED DRY PROCESS.

BY M. CAREY LEA.\*

THE dry processes known up to the present time divide themselves naturally into two very distinct classes: those, like the Taupenot, Fothergill, English, and other processes, in which the chief constituent of the preservative is albumen; and, on the other hand, those, like the gum-gallie, the tea, pyrogallie acid, tannin, and other processes, in which no albumen is used. The albumen processes have certain well-marked and excellent characteristics, but they are all slow, and require long exposures. Nevertheless, it has been found for some years past, in England, where dry plate work is very popular, that a large proportion of the best prints exhibited were made from negatives belonging to the class of albumen preservatives.

On my return to America last summer, I commenced a series of experiments to ascertain whether the advantages of these two different systems could not be combined, and whether a satisfactory rapidity could not be imparted to albumen plates, whilst preserving their delicacy and fine modulation. In this attempt I have recently succeeded, even beyond my hopes, and have obtained a process differing in all its essential features from any now in use. It is a collodio-albumen dry process, and yet as rapid as the wet. At the same time, in simplicity and

\* *Philadelphia Photographer.*



quickness of manipulation, I believe I may say it exceeds all other dry processes.

Before proceeding to the details, I may be permitted a few words of explanatory preface.

When, in the year 1866, I first took up the study of the emulsion process, several formulæ had been published, and some of these called for the presence of silver nitrate in excess of what is needed to decompose the soluble bromides in the collodion. But at that time the silver nitrate was always added in powder, and much of it did not pass into solution. There was a tendency for the grains of nitrate, instead of dissolving, to become coated with silver bromide, and then to resist the weak solvent power of the collodion. I introduced the system of dissolving the silver nitrate by heat in a portion of alcohol, and adding this to the bromized collodion, and at once agitating violently. In this way all of the silver salt was got into solution, and then I found that whenever the silver nitrate was present in excess the plates invariably fogged. After a continued research, I found that this could be obviated in two ways: either by the introduction of a chloride into the bromide collodion, or by the addition of aqua regia. The latter I gave the preference to, and the general experience of photographers during the years that have elapsed since then has confirmed that opinion. Sometimes, indeed, an advantage is gained by combining both methods.

The behaviour of the emulsion made with silver nitrate in solution proved absolutely that up to that time no plate had ever been made with silver nitrate in excess. The excess had lain at the bottom in powder, and inert. Its doing so was all that saved the plates. Had it dissolved, they would have fogged. The addition of a chloride, or of aqua regia, first rendered it possible to use silver nitrate in excess, and the gain in sensitiveness was immense. At first the extent of the advantage was hardly recognized, but latterly it has been thoroughly appreciated. In describing the action of aqua regia, I stated that any amount of excess of silver nitrate might be employed, but that I found the best results came with a small excess. I regret to say that shortly after a most unexampled attempt was made to appropriate my process on the strength of simply varying the proportion of silver nitrate. By some this variation was held to be an improvement, whilst other photographers found that they succeeded best with my formulæ. Whilst these discordant results in no wise justified the attempted appropriation, the fact nevertheless remained unexplained, why such different conclusions should have been come to by different experimenters.

It was not until some time after that I succeeded in solving this enigma. I found that different preservatives required very different proportions of silver nitrate. Up to that time it had been customary to recommend one and the same proportion of silver, no matter what preservative was to follow. This system was essentially wrong, for each different preservative has its definite proportion of silver salts with which it gives its best results. The less sensitive the preservative, the larger the quantity of silver nitrate which it requires.

For a long time I had worked with the cochineal preservative which I had proposed. This is the most sensitive of all preservatives known up to this time; it therefore requires to be worked with a very moderate excess of silver nitrate; if more be used, the plates are found to solarize easily, and if at all over-exposed, are found to intensify with great difficulty.

Subsequently I tried pyrogallie acid, and got very excellent results. This substance proved to be less sensitive than cochineal, but I found that this inferior sensitiveness could be compensated for by increasing the nitrate, which increase was borne in this case, though it would not have been in the case of the cochineal. By further experiments

I succeeded in establishing the general law that I have stated above, viz., that the less sensitive the preservative, the larger the proportion of silver needed for it. So that we have a regular series, cochineal, pyrogallie acid, gallie acid, and tannin, diminishing in sensitiveness from the first to the last, and each member requiring considerably more silver than the next member before it.

As albumen is a preservative considerably less sensitive than any of the four just mentioned—less sensitive, even, than tannin—it is clear that if it be used in the preservative bath the dose of silver must be very large, in order that we may obtain a high degree of sensitiveness; and it also follows that this large dose will be borne without those inconveniences that accompany its use with the more sensitive preservatives. This is to be expected, even if the albumen be mixed with more sensitive preservative agents; for, as I have already shown elsewhere, when two preservative agents of different degrees of sensitiveness are mixed, the result will be a degree of sensitiveness conferred intermediate between the two, but rather inclining to be less sensitive.

Applying this principle, I succeeded at once in obtaining very sensitive albumen plates—indeed, far more sensitive than any one would have believed that albumen plates could be. It is needless here to give the formula, since it has been superseded by a further improvement which I have just made, and shall now describe, and which is a complete departure from all existing methods, both in principle and in practice.

The albumen plates which I first made were prepared in the method usual with emulsion plates. The glasses were edged, and then coated with emulsion, plunged into water, and washed till the greasy lines disappeared, then passed into the albumen preservative, and dried.

(To be continued.)

THE USE OF PHOTOGRAPHY IN SURGICAL AND MEDICAL SCIENCE.—A medical correspondent of the *English Mechanic* writes to suggest the use of photography in medical science. He is probably not aware that the subject has been more than once brought under discussion. Some years ago the late Dr. H. G. Wright called attention in our pages to the subject, appealing to photographers to aid in forming a public medical library by sending all examples of photographs of anatomical and physiological studies, especially abnormal cases. The correspondent of our contemporary in question says:—"A use of the wondrous photographic art has occurred to me as likely to be of great value in medical and surgical science. Perhaps it has occurred to others also; but a humble practitioner in a remote western hamlet has but little intelligence of what passes in the great world. More than once, in a rather long practice, I have met with examples of abnormal structure so instructive, that I have been fain to have recourse to a professional miniature painter to represent them. Yet so extreme was the need of accuracy, so foreign were the subjects to the experience of the artist, and so repulsive were the conditions under which they were set before him, that several guineas was the lowest *honorarium* demanded on each occasion. Now a photographer would reproduce the case in a few minutes, and that with an accuracy absolutely perfect; while, if he took a stereoscopic picture, the presentation would have an aspect of reality incomparably beyond any production of the painter. This, then, would be of great value. But I was further led on to consider the application of photography, and particularly of stereography, to the illustration of normal anatomy; to the representation of the muscles, the vessels, the nerves, the viscera; of the organs of sense, *in situ* and dissected-out; of tissues, sane and morbid; and this, whether in natural dimensions or magnified. Thus would the physician or surgeon be ever accumulating, at small cost, absolutely perfect illustrations of those demonstrations which years ago charmed and taught him in the dissecting theatre. Precious as is his costly Quain, or Swan, or Haller, these stereoscopic pictures would be vastly superior, because infallibly trustworthy, and the student could select such as bore on his special practice."



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## THE LONDON PHOTOGRAPHIC SOCIETY.

THE final meeting of the present session of the Photographic Society of London was held on the evening of Tuesday last, and the plethora of matter of interest, and the full attendance on a warm June evening, gave full evidence that the *raison d'être* of the society continues in full force, and that if any decadence arise, it is not to lack of interesting subjects, or lack of interested members, it can be attributed. A stormy, and in some respects worse than wasted, session comes to a close with little effected, beyond the restoration of the bulk of the old officers who had felt compelled to resign, and new blood in similar proportion to that which, had been elected at each annual meeting for many years back. These officers have considerable work before them during the recess, on the satisfactory completion of which, some hope may be entertained that a new session may open in the autumn, to be devoted to the legitimate business of the society, with the jarring antagonisms of the past few months put aside for ever.

No announcement regarding an exhibition has been made to the members, for the simple reason, we believe, that no decision has yet been come to in regard to it, the newly elected council having had neither time nor opportunity either to discuss or arrange the matter, although it has not escaped their attention. A strong feeling, we know, exists on the part of many members of the council on the importance of a specific effort to secure an exhibition in which no falling off shall be manifested. The maintenance of its annual exhibition is doubtless one of the most important and valuable of the society's works. The misfortune is, that when time and energy are frittered away in wretched squabbles, legitimate work inevitably suffers. In many cases, too, the confidence of members is shaken, doubts arise as to whether an exhibition will be held, preparations for contributions are delayed, so that serious risk exists of the possibility of securing a successful exhibition. It is to be hoped, however, if the council see the possibility of holding an exhibition, due effort will be made by contributors to prevent it falling below the high standard of displays of the last few years. We presume that some early intimation as to the determination will reach all concerned.

The revision of the laws, as Mr. Spiller announced on Tuesday evening, is another important subject which is occupying the attention of the council, and a revised draft will doubtless be shortly in the hands of every member. A special meeting must, of course, be held soon afterwards, for the purpose of considering and passing the laws in their new form, the final decision of any moot points being doubtless left to the vote of the members at large. After the adjournment of the meeting on Tuesday evening an attempt was

made to open a discussion on this subject, Mr. Hughes asking by what right the council attempted to prepare any revised draft of laws, a committee having already been not only appointed to undertake this duty, but having completed it. The answer is very obvious. Apart from the illegality of all the proceedings at the time the committee was formed—a point which it is not desirable now to discuss—it is the duty of any committee to report to the council, and the duty of the council to bring the matter in such manner as they deem best before the society for final decision.

## RENDERING ACTINIC NON-ACTINIC RAYS.

DR. VOGEL'S announcement a few months ago, to the effect that he had discovered a method of rendering bromide of silver sensitive alike to all the rays of the solar spectrum, was of a character so startling that experimentalists in various quarters of the world at once addressed themselves to a repetition of his experiments for the purpose of test and verification. In some instances we fear the test has been undertaken in a spirit of incredulity and antagonism; but in many others, it cannot be doubted, it has been undertaken in honest good faith, with a hope to verify rather than disprove. Unfortunately, it seems that in every instance recorded up to the present time the results have been negative. In no single instance have similar results been obtained. Dr. Van Monckhoven, in his paper brought before the Photographic Society on Tuesday evening, describes minutely his experiments, and his failure to obtain the slightest extension of the photographic image of the spectrum upon a bromide film saturated with the different aniline colours which Dr. Vogel had indicated, and also points out what he considers to be the failures in precision in the instruments used by Dr. Vogel, which have led to the error of deduction upon which the supposed theory rests.

As we shall publish Dr. Monckhoven's paper in our next, we do not enter into further details here; but we cannot help expressing a hope that notwithstanding the accumulation of negative evidence against the discovery, Dr. Vogel may yet be able to substantiate it. It is in perfect keeping with sound philosophy, and with the conviction of such sound philosophers as the late Sir John Herschel, that means should exist of extending the narrow limits within which at present actinic power is exercised by the solar spectrum; and the hope must rest in modification of, or addition to, our sensitive media. Dr. Vogel is challenged now to exhibit results, and we are not without a hope that he can and will do so. A print from one of his experimental negatives recently passed through our hands, and, so far as a brief examination permitted us to judge, an extended spectrum was undoubtedly obtained on the coloured film. The discovery is so important, and the discoverer at once so honest and capable, that we do not readily reject the alleged tangible proofs, even in the face of much negative result in the hands of other honest and able experimentalists.

## VISITS TO NOTEWORTHY STUDIOS.

### FRITZ LUCKHARDT'S STUDIO IN VIENNA.

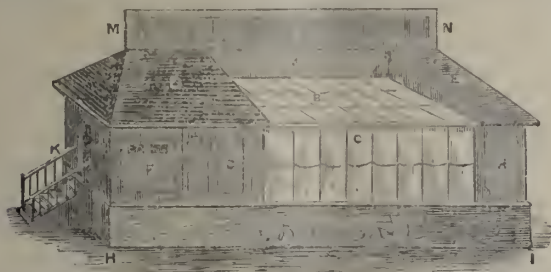
WE are enabled to give our readers a glimpse of the studio of one of the most skilful and successful of Continental photographers, by extracting from one of Mr. E. L. Wilson's letters to his journal, giving details of his Continental ramble. Herr Luckhardt is not only a skilful photographer himself, but a cause of much good photography in others, as many of the novelties in style he has sent out have done much in stimulating photographers in other parts of the world. Mr. Wilson states that the studio did not impress him as so fine as many in America.

"It is situated on the roof or terrace of the Grand Hotel, and a long climb is necessary to reach it. But in Europe



people must get accustomed to such clambers, for it is a necessity; and in Mr. Luckhardt's case it seemed to make no difference, for his rooms were always crowded, and his camera constantly busy. His reception, dressing, exhibition, finishing, and delivery rooms are all on one floor, and over these the skylight, dark-room, printing, and solar camera departments are conveniently arranged, and supplied with every necessary thing to make the best of results. The assortment of furniture and backgrounds was lavish and elegant. The skylight proper was nothing extraordinary, but one in which the most beautiful effects are obtainable at almost all times. The drawings I annex will bring it more plainly to your mind.

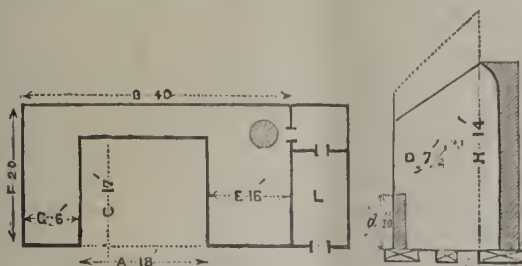
"The first one is an exterior view: it represents it as standing on the ground, while in reality it is built upon the solid marble roof of a hotel, the other rooms mentioned being underneath in the hotel building. K is the entrance



from the roof to the dark room; B is the top light, which is sunk below the angle of the roof; D E and C are the side lights, both of which face the north. It reminded me more of Messrs. Trask and Bacon's Philadelphia light than any I have seen. M N is a 'sunshade' erected to protect the skylight from the southern sun. Separate from this on the roof are the printing and solar camera rooms.

"The next figure gives us the exact ground-plan of the whole, and the third figure a sectional view of the skylight proper. The dimensions are given by the figures in Austrian feet and inches, and the Austrian foot is about three-eighths of an inch longer than ours. Where two commas are over the figure, it means inches, and where one only is used, feet are meant. I think it is plain to you without further description.

"Mr. Luckhardt usually works an open light, and from



both ends of the room, east and west. For cabinets and large heads he uses a four-inch diameter Voightlander lens, and exposes on an average about fifteen seconds. His card lenses are of the same excellent manufacture.

"We had many 'talks' together about photography and photographers, and I found him, as one must be sure of after examining his work, a man possessing first, the most exalted opinion of his art; second, the importance of making every picture as near as he can to perfection; and third, as full as he could be of that indescribable feeling which all must attain if they would excel. Works of art are scattered and hung all around, that he and his assistants may study them, obtaining an idea here and another there that will serve them at some time or another. For the same reason he subscribes for all the illustrated news-

papers, in order to study the pictures. He said, 'In the one I may find an idea for myself; in another something useful for my retouchers; and in all something of service to my printer, or pupil, or other assistants.' He truly said, 'The skylight construction is not the thing. It is the quality of the light from heaven itself. Give me that, and I will do all the rest, even without any studio. If the light is not good, I dismiss my sitter, and wait until it is good; or if they cannot wait, I ask them to come again. If they cannot do either, then I request them to go to another photographer, as I will not willingly make a bad picture. With me it is all a matter of feeling, and I cannot work without it. One cannot impart this to another, or hardly describe it. An expert will go over a number of examples of cloth, and tell you their value, but he cannot tell you how to do it.' It must be acquired by study and practice, and I guess once in awhile it comes naturally. Mr. Luckhardt examines and studies each negative carefully before dismissing the sitter, and if it is not up to his ideas, another trial is made."

### FRENCH CORRESPONDENCE.

THE PARIS PHOTOGRAPHIC EXHIBITION—AWARDS TO ENGLISH EXHIBITORS—RODRIGUE'S PHOTO-LITHOGRAPHIC PROCESS—AFRICAN PHOTOGRAPHS—A NEW METHOD OF PHOTO ENGRAVING—MOOCK'S TREATISE OF PHOTOGRAPHIC PRINTING—SPIRIT PHOTOGRAPHS.

At the last meeting of the French Photographic Society, held on Friday, the 5th of June, a list was read of the awards which had been accorded to the photographers and manufacturers who have taken part in the exhibition now open at the Palais de l'Industrie. The number of medals and honourable mentions awarded, which are nearly equal to the number of exhibitors, tends to confirm what I said in my last letter regarding the exceptional excellence of this exhibition. The English artists who have sent specimens of their work have no reason to complain of the reception which has been accorded them, for, if I do not err, every one of them has received a medal or honourable mention. A *medaille d'honneur* has been accorded to M. Ronsselon for his helio-engraving process.

At the same meeting, M. Davanne called the attention of photographers to the use of a wide-angle lens as a multiplying instrument, and he exhibited several impressions taken with it. A communication was also made describing the photo-lithographic process of M. Rodrigues (of Lisbon). This process, which is for the reproduction of line drawings (maps, plans, MSS., &c.), gives excellent results, and differs somewhat from the methods of Poitevin and Toovey, in respect to the paper which serves for obtaining the transfer being replaced by a sheet of tinfoil. It is upon this vehicle, spread upon a glass plate, that the film of bichromated gelatine is spread which is destined to be printed under the cliché.

The meeting was closed by M. Carotte, who presented to the society one of Weston's burnishers, of which a description appears in the PHOTOGRAPHIC NEWS of the 29th May. This simple and compact instrument, which gives a most agreeable glacé to the print, was extremely well received.

A great deal has been said about photography at the last two meetings of the Academy of Sciences. About a year ago, a Russian traveller, M. Schweinfurth, made known that he had discovered in Africa a race of dwarfs which he described as being the missing link between the man and the monkey. Recently, the Academy received some photographic portraits of two children belonging to this pigny race, and who have been sent to Europe to be educated. Our savans have made a minute examination of these portraits, and in rectifying the erroneous details which have been given in the description, they have been able to establish the fact that these dwarfs are a variety of the negro race rather than a perfection of the monkey



race, and that one has here to do with an inferior order of men, and not with monkeys that have surpassed the limits which separate us from four-handed animals. The best sketches, and the most precise details, could make no way against photography, which, by reason of its fidelity, settled the question at once.

An expeditious and very economical engraving process has been brought forward for the preparation of maps and plans, which reminds one of the well known experiments made by MM. Donne, Fizeau, Claudet, and others, to transform the Daguerreotype into a printing block. The process was communicated to the Academy of Sciences on Monday last, and consists:

1. In covering a copper plate with a thin film of adherent silver upon which a coloured varnish is spread.
2. In drawing, with a dry point, any design, such as is done with a diamond in engraving upon stone.
3. Finally, in etching the tracing by means of perchloride of iron.

In the case of a reproduction, whether an enlargement or reduction, tracing may be dispensed with, by making a Daguerreotype impression upon the film of silver. The adherence of the silver yields a tracing, after etching, of great sharpness, a matter of much importance in the production of maps. The etching of perchloride of iron is very deep.

M. Leon Moock, who calls himself by the plain name of operator, has just published, under the title of "Complete Practical Treatise of Photographic Printing with Fatty Inks," a little volume which appears to us destined to vulgarise rapidly the new method towards which general attention has wandered during the last few years. He gives a resume of all that has been published hitherto, omitting such details as are not necessary in practice, and thus constituting his work a most correct manual. Notably, we find in one chapter, that treats of the development of the image, some details which appear to us of a perfectly novel character.

M. Moock has adopted copper plates as supports for printing, and it is upon this metal that he spreads his sensitive film and obtains his impression. To develop, he begins by treating it first with warm water, then with water of a much hotter description, which is changed three times every five minutes, and then the plate is plunged into a bath containing

Water	...	...	...	1000 cub. cents.
Gallic acid	...	...	...	5 grammes
Gum	...	...	...	15 "

The plate is again washed, and dried. During the development in tepid water an accident may happen which at once causes the loss of the plate; for the gelatine not acted upon by light swells, sometimes, in a most exaggerated manner, under the action of the water, and then collapses. To prevent such a catastrophe, the film of gelatine should not be taken out of the water until it has been passed into the gallic acid mixture, and the temperature of the water should always be maintained evenly during the whole period of the development, and ought never to go beyond 35° Cent. In other words, great care must be taken to prevent the film of gelatine being exposed to the air between the two baths. The zinc bath employed should have a tap, by means of which it can be emptied gently. Before plunging the plate into the bath it should be rinsed with warm water, and as soon as it is to be changed the tap is opened, until half the water has run out, in such a way that the remainder is always sufficient to cover the film. The water that has escaped is replaced by other of a like temperature, and so on. The gallic acid solution, and the washings which terminate the operation, ought to be also warmed to a similar temperature.

Some time ago I heard mention made of spirit photographs, many of my friends having visited a photographer in Paris and had their portraits taken, in which they

appeared in company with a spectre whose shroud seemed almost to envelop them. They were always phantoms of illustrious persons, which was, naturally enough, very flattering to the models who shared the pose. Bertall, who is a humorous writer, an artist of talent, and a very skilful photographer, and a little credulous in matters of this kind, published in the *Petit Moniteur* an account of a certain séance in which he had been a spectator and actor, in company with an English chemist, at the photographer's in question. He seemed so sincerely convinced, not only of the supernatural character of the double portrait which had been made for him on this occasion, but of the marvellous skill of the operator, that I believed it was a question of some new invention, surpassing those which have been devised in America, in England, and in France, of late years. I made a visit to the photographer and medium, and, by chance, he happened to be away from home, and his wife received me. As I had given my name, she appeared very reserved, but at the same time showed me an album full of portraits of men, women, and children, each accompanied by the inevitable phantom. As a general rule, the spirit did not deign to show itself with face uncovered, and it was always a white figure of a vague and transparent character. Lamartine, Napoleon III., Alexandre Dumas, Rossini, Meyerbeer, Byron, and other celebrities of different countries were shown, enveloped in white mantles. I remarked upon the numerous and illustrious company which answered to the beck and call of the spirit photographer. "Ah, Monsieur," replied the lady, very flattered, "you see we have a large selection. . . ." I smiled at this avowal, and my informer bit her lips. She might have added that the collection could always be augmented by purchases from the Italian pedlars, who sell at reduced prices busts and statuettes of illustrious personages. Nothing looks so much like a spirit as a statue enveloped in a white cloth. As regards the method adopted for taking them without the client seeing the process, it is not, I think, necessary for me to say anything, for English photographers, no doubt, know many ways of performing the trick successfully. ERNEST LACAN.

### THE COLLODIO-CHLORIDE PROCESS.

BY W. T. BOVEY.

The few remaining members of that old school of photography who are keeping themselves strictly aloof from the wordy warfare now raging between parties, and continue to make it their study and pleasure to direct their best energies in advancing the interests of their favourite art, cannot but regard with feelings of regret the bitterness of antagonism and selfishness of design which are making rapid and disastrous inroads among a body of talented men who, at no distant period of the past, were wont to put forth their most vigorous efforts in the cause of progress, and who constantly vied with each other in giving publicity to their respective discoveries, applied improvements, comparative experiences, and, in addition to these, helpful advice to such as needed help. Most certain is it that I sincerely deplore those manifestations of splenetic differences recently indulged in to the discredit of the actors, to the great hurt inflicted by such unwise quibbling on the future of photography; and truth bids me add my earnest protest against those applied attempts to set my name up as a handle wherewith to give a new turn of expression to the bitterness of personal jealousies or hate.

As regards the disputed question of priority connected with the addition of citric acid to a collodio-chloride admixture. As a matter of fact, I was the earliest worker in that particular; Mr. Swan followed directly afterwards; and Mr. Mayall took third place in making a similar suggestion. But as far as I am concerned, any person is welcome to the credit that falls to my share, inasmuch as I attach no greater degree of importance to such sugges-



tion than I should if, perchance, an experimentalist were to introduce a printing process in silver, that left for my suggestion the needed addition of a chloride to make the formula complete.

My first trial of the collodio-chloride process included an addition of citric acid, simply because prior knowledge of the principles of silver printing had taught me that chloride of silver alone is incapable of printing a vigorous image. I think it a matter deeply to be regretted that those gentlemen, who are now disputing over the matter of authorship, never questioned Mr. Wharton Simpson's claims immediately subsequent to his publication of a discovery, set forth unmistakably as his own in all particulars save the organic addition, which was first accredited to Mr. Swan, and subsequently to myself. Had any objections been made at the time of introduction, the whole matter might have been exhaustively discussed, and alleged priority of invention would thus have been easily and indisputably adjusted.\*

As far as the interests of photography are concerned, it matters but little to whom the credit should go, the process having been published by the author untrammelled with secrecy or other restrictions. The results it is capable of yielding are so beautiful that all the eulogies bestowed upon the process it richly deserves. That there are difficulties connected with the working I freely admit, but those are by no means insurmountable. I purpose, in my next, conveying some instruction which may, perhaps, enable experimentalists to overcome the chief difficulty of which they complain.

#### A FEW WORDS ON THE BEER AND ALBUMEN DRY PROCESS.

BY W. H. DAVIES.†

LOOKING over the pages of the YEAR-BOOK for 1874, an article by Captain Abney, R.E., attracted my attention, from the fact of yourselves and the journals having christened a similar process by my name. The gallant and scientific Captain seems to have been unaware of this, and that my first experiments must date back ten or twelve years, and that after it had been practised by a number of our members, and found to be good, Dr. Nicol brought it before this society in a paper published in the *British Journal*, July 26th, 1867, and thereafter described improvements on it in the "*British Journal Almanac*" for 1868. A curious coincidence took place with the publication of that paper, as with many other discoveries, improvements, and adaptations; the same journal (*B. J.*) which contained the paper read before this society, contained also a note by the editor, stating that a Mr. Murdoch (I think the name was) had forwarded for publication a process so similar that they might be called identical. Some of us thought this gentleman to be a mythical personage, invented by some sportive correspondent; but whether so or not, we have heard no more of him, and the albumen

beer process has, by general consent, been called Davies' dry process.

As practised by Captain Abney, however, its details are somewhat different, and I think somewhat more complicated. I have, however, gone over the process very carefully, to ascertain whether I could improve on my own system, and so be able to assist such of my fellow-workers who use this process regularly. In my hands, however, I am constrained to say that it does not come up in all respects to the old standard, although giving very good results—better by far, and surer, than many of the more vaunted dry processes. It is a peculiarity of every process into which albumen is introduced that it invariably improves the ordinary collodion negative.

Since the last publication of any words of mine on this process, I have made a number of little improvements which may be worth formulating and placing alongside Captain Abney's method, so that anyone wishing to practise a really serviceable and valuable dry process may have no difficulty in working one which has sufficient variability and elasticity to allow of such differences of detail as one ounce of albumen, or the white of one egg, to ten ounces of ale, as I use, up to the whites of four eggs or ounces, to half a glass or five ounces of beer, as Captain Abney uses. In working the process, all that is necessary to be insisted upon is, that a thoroughly porous collodion alone be used in this as in other dry processes, without which not one of them can be successful.

I will now quote shortly from the YEAR-BOOK the gallant Captain's method. After giving instructions as to sensitizing he says: "Immerse in a bath of distilled water till all greasiness disappears, and then wash for a minute or two under the tap. If distilled water be not at hand, use ordinary water (rendered slightly alkaline with potash, if iron be suspected as an impurity) which has previously been boiled, and filtered through charcoal; boil, filter through charcoal. If alkaline, add a drop or two of nitric acid, and use this for the first washing. Next, you must have at hand a glass of beer divided into two parts. To one must have been added one grain of pyrogallie acid to each ounce; the other must be plain. The whites of four eggs should have been beaten up carefully, and to each white, one fluid drachm of ammonia should have been first added. This is filtered through muslin, and placed in a bottle alongside the two beers. To a half ounce of the plain beer, half-an-ounce of the albumen must be added in a small glass, and the two mixed together with a rod. This is flowed on the plate, and allowed to rest on it half a minute. The mixture is then thrown away, and the plate thoroughly washed under the tap. A final wash of the beer containing the pyro is given, and the plate is then set up to dry spontaneously."

I now proceed to give my own method in detail as shortly as possible, consistently with stating clearly what is necessary:—First, albumenize the plate; secondly, collodionize; thirdly, bathe it the usual way as for any wet process, then wash under the tap or in dipping bath till greasiness disappears. Do not wash too thoroughly, as that tends to make the plates less sensitive; but if not washed enough, they turn brown—decompose, in fact. Well drain. The preservative is made of strong sweet ale, ten ounces or one half imperial pint, to which add from five to ten grains nitrate of silver dissolved in a few drops of water (or use an equivalent quantity of the bath you are using); stir with a glass rod, and allow it to settle, after which filter. More or less silver must be used as you find more or less of free chlorides in the beer, but always leaving a surplus of free silver, and shaking occasionally till the beer has taken up as much as possible of the silver, and, if necessary, refilter. Then, having taken the white of one egg (one ounce albumen) and twenty grains of gallic acid, add these to the beer in a forty-ounce bottle with a few pieces of broken glass in the bottom to assist in mechanically mixing the ingredients; shake rapidly and

\* So far as the question of fitness and decency is concerned, there can be no doubt that any question of authorship should be raised at the time a claim is made; but, so far as facilities for ascertaining the truth and adjustment are concerned, there are not more difficulties now than there ever were, as the whole question rests on published documentary evidence. In the year 1860 M. Gaudin made some experiments with emulsions of iodide and bromide of silver in collodion, and in one of his articles incidentally suggested that a similar use might be made of chloride of silver. None of the ingenious suggestions came into use, and were, we fear, for the most part forgotten. In 1864, in consequence of a conversation with Professor Ilse on actinometry, in which we pointed out the importance of an inert vehicle for chloride of silver used in such work as he had in hand, we resolved to try collodion. In a conversation with Mr. Spiller at the time, we mentioned this, and he expressed a conviction of its impossibility, and we neither of us had any remembrance or idea of any suggestion from M. Gaudin. We tried, and succeeded; and worked out a practical, successful process, in the course of which we produced the first collodio-chloride pictures we have any reason to believe ever existed. M. Gaudin, writing to us, and writing in his own journal, disavowed any claim, saying distinctly that on trying the suggestion he himself had made, he saw no possibility of success. The only challenge of our claim comes from the petty jealousy of a journalistic rival, and the motive is so transparent that it is really a work of absurd supererogation to expose it.—*Ed. Photo. News.*

† Read before the Edinburgh Photographic Society.



thoroughly for a few minutes, then allow the whole to settle, and either decant or filter, as may be convenient.

To apply the preservative after washing and drying, run a small quantity over the plate and allow to run off, drain for a few seconds, run over a fresh coat, which will do for first coating the next plate, drain, and set up to dry. The more rapidly the plates are dried the better they are.

*Development.*—It is in the development, I believe, where there is any difference in many of the various methods of dry-plate work, and in this I think my present mode is superior to that used by Capt. Abney.

First, wet the plate all over; then, if there is any doubt as to over-exposure, use a plain solution of pyro of any strength from three to twenty grains per ounce of water; this may be left in a flat bath without examination for any time up to some hours. If fully out, wash and intensify as usual; if not, return to plain pyro for a longer time. But this is seldom needed, the alkaline method of developing answering admirably for this method, in using which I take the above plain pyro, and if the image does not begin to appear within half a minute, I add to it a few drops of a twelve-drop solution of ammonia fortis to one of water, and keep on adding till I arrive at the proper strength. No bromide of potassium is required, as the preservative itself is gradually washed into and mixes with the alkaline developer, acting as a restrainer of the more active ammonia.

Were it for nothing else but this one improvement, I would hold the beer and albumen preservative as the best of all the numerous family of that name, inasmuch as whatever simplifies a process without sacrificing any other essential, makes it at once more certain and desirable. Now this simplifies the method of alkaline development, and makes it as easy as the ordinary acid mode, a claim I have not seen made for any other preservative or method whatever. Another advantage is the power a few drops of the preservative gives of restraining the energy of the developer, whether that results from too much pyrogallie acid, too much ammonia, or too much exposure; and so, by judiciously arranging the developer to the exposure of the negative, securing a perfect picture, whether the plate may have had much or little exposure. After all, exposure is a merely comparative thing. A momentary impact of actinic force is quite enough if we can only hit on the developer by which that can be continued, intensified, and developed.

The same preservative may be used with bromide emulsion plates and with the purely bromized collodion bath plates, and with these it is in no respect inferior in most qualities to any other, and it has, in addition, the advantages I have claimed for it. If additional rapidity is needed, it is conferred by increasing the proportions of free silver and of gallic or pyrogallie acid, and cautiously reducing the strength of the beer-albumen with distilled water. I may mention that I use the gallic and pyrogallie acids indiscriminately: if one is not at hand I use the other. This must be borne in mind: the more rapid the prepared plates are, the more perfectly should they be shielded from the atmosphere, and the shorter time they should be kept between preparation and exposure.

Captain Abney mentions two months as the time during which he has found the plates to keep well. I have repeatedly used plates eighteen months old, and found them quite perfect; and to-night I lay before you a negative made from a plate prepared a year ago for Mr. Dallas, which you will see is quite perfect. A single fact I may mention as to the keeping after exposure. I find them to keep well for two or three weeks, but after that time the image seems gradually to become weaker, and after six weeks or two months, the image that remains is a mere phantom, incapable of being strengthened. My advice, therefore, is, with these plates, develop them as soon after exposure as possible, and in the interval between expo-

sure and development keep them free from dust and in a perfectly dry place.

And now a last word to those who have not yet determined on a suitable dry process, and to those dissatisfied with the one they are presently using. I say, unhesitatingly, try the process, and you will get first-rate plates, equal, in most respects, to wet plates, and superior in some; and as the proper methods of manipulation are mastered, you can calculate with absolute certainty on getting first-rate negatives.

## Correspondence.

### MAGIC LANTERN IMPEDIMENTA.—COLOURED GLASS.

DEAR SIR,—I hardly expected to have found it necessary to have another word or two with my friend Mr. Martin at present, but as, in "an educational work like the present," correctness in little matters is of vital importance, you will please give me room for a few lines in reply to his letter in last week's issue. He is still in a state of confusion as to what should be understood by pints and gallons, and rather uncharitably tries to arouse suspicion in the minds of simple folks as to the honesty of some of those with whom they have business relations. Let me assure them, however, that there is no cause for their apprehension. There is only one recognised legal pint by which buying and selling in our country can be carried on, and it measures twenty ounces of 437.5 grains. A gallon consists of eight such pints, and weighs, of course, exactly ten pounds; and equally of course, the fourteen gallons of Mr. Martin will weigh, not 112 lbs., as he still seems to think, but 140 lbs.

Regarding his notions on coloured glass, I am not at all sure that I understand them; yet my impression was, and still is, that he recommends two plates of yellow, and when the eye gets fatigued therewith, to give it a rest by letting green rays fall upon it; and this he proposes to do by slipping a blue plate between them. Now, although on the admixture of yellow and blue pigments an apparent green is produced, the same result is not produced by combining yellow and blue rays of light, either by the colour top or any of the other ways known to physicists, simply, as is known now, because green is a primary colour, and, along with red and violet, make up what we call white light. Of course, if my friend sticks to the old theory of red, yellow, and blue, I need say no more about it; but if he has advanced with the advance of knowledge, he must know that according to the modern theory, the light that passes through his pair of yellow plates is yellow, because compounded of red and green, and that the insertion of a blue glass cannot send an additional ray of green to rest the weary eye, but simply lowers the tone, and gives less to do. If Mr. Martin will spend half an hour in the examination of various coloured glasses with a prism, I am quite sure he will alter his opinion as to the double glass, and believe, with the great bulk of photographic mankind, that for ordinary bromo-iodized work a good orange, that absorbs all the violet, and transmits only the red and green (the former being slightly in excess), is best; and that if he wants to give the eye a rest with nature's glorious green, he will not do so by cutting off the red with a blue glass, but, for the necessary time, substitute for an orange, a plate of that refreshing colour; such, at least, is the opinion of your humble servant,

JOHN NICOL, F.R.D.

Edinburgh, June 6th.

### PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

DEAR SIR,—In order to increase the funds of the "Photographers' Benevolent Association" the board of management propose to organize a distribution of photographic works of art, upon the principle of the art union.

To carry out this plan, will you kindly allow me to appeal, through your valuable pages, to professional and amateur photographers, for donations of photographs, large or small, singly or in quantity, mounted or unmounted. Parcels per post, or carrier, to be addressed to the Secretary, 174, Fleet Street, E.C.—I remain, dear sir, respectfully yours,

W. T. WILKINSON, Secretary.

PS.—As a beginning, Mr. England has kindly promised a liberal donation.



## Proceedings of Societies.

### PHOTOGRAPHIC SOCIETY OF LONDON.

THE last meeting of the present session was held in the Architectural Gallery, Conduit Street, Mr. J. SPILLER, F.C.S., in the chair. The minutes of a previous meeting were read and confirmed, and Mr. R. J. Friswell, F.C.S., was elected a member of the society.

Mr. DALLMEYER read a communication from Dr. Van Monckhoven on the sensibility of bromide of silver to non-actinic rays when saturated with a colour which absorbs those rays, describing experiments, testing and calling in question the theory of Dr. Vogel on the subject. Some negatives illustrating the subject were exhibited.

CAPTAIN ABNEY had tried some experiments, but failed to confirm the theory of Dr. Vogel.

After votes of thanks to Dr. Van Monckhoven and Mr. Dallmeyer,

THE CHAIRMAN briefly described the purport of a paper by Mr. J. King, M.A., which, in the absence of the author, would be taken as read. The paper was devoted to a consideration of gelatine as a vehicle for silver salts, and described the method, in forming an emulsion of bromide of silver in gelatine, of removing the nitrate of potash and other soluble salts by means of dialysis.

Mr. KENNETT then read a paper on the gelatino-bromide emulsion process, and the use of a dry pellicle, in which he described his varied experiments and his method of forming the gelatino-bromide pellicle and keeping it in a dry state. Some examples of the pellicle and some negative transparencies and prints illustrating the value of the process were exhibited.

After a few remarks from the Chairman and a vote of thanks, Mr. Kennett, in reply to a question, said that the process of dialysis for removing surplus salts was practically useless.

Mr. HUGHES described some comparative experiments in the studio with plates prepared by Mr. Kennett. Wet collodion plates as usually worked for portraiture were tried with the gelatine plates with different relative exposures. The time required to produce a good negative with the dry plates was just the same as for similar results with a wet plate. He cautioned experimentalists against over-intensifying, as the olive tint of the gelatine plates was deceiving, the negative looking thin when it really had sufficient printing intensity.

A paper consisting of some notes on alkaline development, by Col. Stuart Wortley, was taken as read, and a vote of thanks to that gentleman was passed.

THE CHAIRMAN, in adjourning the session until after the recess, said that the council had the subject of the revision of the rules under their attention, and he hoped shortly to make a communication to each member on the subject. The meeting would now stand adjourned until autumn.

After the adjournment, Mr. Hughes wished to know by what authority the council were revising the rules, a committee having already done that work? Dr. Mann pointed out that the real object desired was a revision of the rules, and the committee had only sent in a draft for consideration. That draft, or a draft by the council, or both, could only be decided by the members at large. Some conversation followed, in which anything like factious opposition was deprecated as unwise and injurious.

### EDINBURGH PHOTOGRAPHIC SOCIETY.

THE eighth ordinary meeting of this society was held in the Bible Society's Rooms on the evening of Wednesday, the 3rd inst., the president, Mr. R. G. MUIR, in the chair. The minutes of the last meeting were read and approved, and the following gentlemen were admitted ordinary members:—Messrs. John Lessels, Grierson G. Mitchell, and John Murray Gartshore.

THE CHAIRMAN said that before proceeding to the ordinary business of the evening he had to intimate the presentation to the society of two very handsome gifts—an oak book-case by Mr. Murray Gartshore, and a fine copy of Rejlander's "Two Ways of Life," by the family of their late fellow-member, Mr. James Wood. Some three weeks ago, on the invitation of Mr. Gartshore, he and the two secretaries had visited Ravelston, and spent a very pleasant day in examining the house and grounds. As one of the out-door meetings was intended to be held there, the members would see that it was a perfect mine of photographic wealth. In one of the rooms Mr. Gartshore showed them the book-case, which, in consequence of alterations, had been removed from the library, and kindly offered it to the society, if it would be of any use to the

members. They of course gladly accepted the offer, and he might add, that in addition to its intrinsic value, it was said to have the still higher merit of having been designed by Sir Walter Scott.

Mr. DAVIES said that no more acceptable gift could have been received, as the members were aware that the committee had been for the past two or three years looking out for a suitable book-case in which to keep the literary and artistic property of the society. He moved a very hearty vote of thanks to the liberal donor of the useful gift. Mr. W. NELSON seconded the motion, and requested the secretary to convey their thanks to Mr. Gartshore.

Mr. TUNNY, in proposing that the thanks of the society be conveyed to the family of the late Mr. Wood, said that he was glad that the society now possessed a copy of Rejlander's interesting picture. It was the first, and, perhaps, most successful, attempt at combination printing, and excited much interest and discussion at the time of its publication. This was seconded by Mr. WANCHOPE, and the secretary was requested to get it suitably framed, with a view to its preservation.

THE PRESIDENT then said that the business committee had for some time been anxious that some member should undertake to bring before each meeting a short paper, consisting of brief gleanings from the photographic journals, with as brief comments or criticisms—the spirit of the journals, in point of fact—but they had not till now succeeded in inducing any one to undertake the duty. Mr. Davies, however, had consented to make a beginning, and would now read the first paper (see page 278.)

Mr. TUNNY, in reference to Mr. Davies' observation regarding Obernetter's process for the reproduction of negatives, said that Mr. Carey Lea seemed in high dudgeon with M. Obernetter for claiming to be the originator of the process, and said that it was nothing more than a modification of one previously published by him. If that be so, then, most assuredly, Mr. Lea could not claim originality in the publication, as his was nothing more than a modification of that published by Camarsac, and one patented by Jonbert at least fourteen years previous. He himself had been working in the same direction as early as 1855, and had got fair results by adding bichromate of potash to a mixture of dextrine and albumen, exposing under a negative or positive, and brushing on the lampblack or carbon (got by holding a piece of glass over a burning candle).

Mr. DAVIES said that photographic inventors and experimenters should be diligent readers of the journals, else they would most certainly be constantly getting into hot water. He had no doubt that many unsound claims were made in ignorance of what had been done before, but he was equally sure that many were made in connection with which charitable supposition would be thrown away. As a case in point, he might mention the manufacturer of (he thought) the only commercial steam coagulated albumenized paper, Mr. Skinner, late of Glasgow, now of London. He had come to Edinburgh, called on him (Mr. Davies), and had been introduced to Mr. Wood, the discoverer of the method. From both he got all necessary information, and then went off to the proper office and registered it, which was, of course, not worth the paper on which it was written, much less the fees which had been paid.

Mr. PRINGLE said they had got one of the nine-inch rotary burnishers, which at first seemed as if it would do; but, although he was not yet in a position altogether to condemn it, they were not certainly pleased with its work. In the first place, they had discovered on the burnisher a scratch so minute that it required the aid of a lens to see it, and yet it made its mark on every print; and the agent through whom it was sent refused to exchange it, on the ground that they were all tried and found right before being sent out. This, of course, would show how much care would be required to prevent a speck of hard dust getting between the print and the burnisher. Then he thought the roller was much too small for the size of the plate, and in consequence—in their hands, at least—the polished surface of the print was covered with wavy markings running at right angles to the way in which the burnisher had passed over it, as would be seen in the card which he laid on the table. And lastly, when the light was applied to heat the plate, there was a large quantity of condensed moisture formed, which caused considerable delay before getting to work, and which would tend much to oxidize or rust the polished surface of the metal.

Mr. TURNBULL had tried one of the burnishers thoroughly, and did not like it. It was more difficult and troublesome to work, and did not produce a better, if as good, surface as some of the older presses in the market. The machine was simply cast iron, and the prices charged were ridiculously high.



Mr. TUNNY heartily agreed with all that had been said against the burisher, and begged to say, in addition, that it pulled the paper in such a way as to produce absurd distortion.

Mr. DAVIES then read a paper entitled "A Few Remarks on Dry Plates, with special reference to Captain Abney's Beer Process" (see page 285), and laid on the table a number of fine negatives to show what the process, as worked by him, was capable of producing.

They were much admired, and several members said that their experience led them to consider Davies' process the best yet introduced. Dr. Thompson had wrought it successfully for a long time, and he had also tried putting the plate direct into the beer preservative, with considerable advantage.

Mr. W. NEILSON, in moving a vote of thanks to Mr. Davies, said that he had done the "Spirit of the Journals" so well, that he ought to continue it, and he was certain that such monthly papers would elicit much valuable information. The vote was carried by acclamation.

Two questions from the box—"What are the relative advantages of alkaline and acid pyrogallic development?"—and "What is the most likely cause, and best remedy, for the blistering of albumenized paper?" were deferred till next meeting.

#### OLDHAM PHOTOGRAPHIC SOCIETY.

A SPECIAL meeting of the Oldham Photographic Society was held on Tuesday evening, June 2nd, for the purpose of selecting a presentation print, and fixing a time and place for the out-door meeting.

A number of prints, sent by V. Blanchard, were laid on the table by the secretary, and so excellent were they thought by the members, that they resolved to retain for their portfolios all prints not selected as presentation prints.

The out-door meeting was fixed for Alderley, on June 11th.

### Talk in the Studio.

HARVEY AND REYNOLDS' HEAD-REST.—We have been favoured with photographs of a new head-rest, recently introduced by Harvey and Reynolds, which seems to possess especial points of efficiency and convenience, besides a broad and firm base, giving steadiness; easy facilities for moving; and support alike for head and body. There appear to be admirable contrivances for adjusting these rests to any position of the body, and a capital plan for throwing the support out of the upright, to bring the rests into convenient position, which will often prove of singular value in adjusting the rest for use in groups, as well as for ordinary standing and sitting figures. So far as we can judge from the pictorial presentment, the new rest seems to be in every way capital.

TETSCH v. THOMPSON.—A case possessing some curious interest to photographers, which has been pending nine months, was decided in the Court of Exchequer on Thursday, before Mr. Chief Baron Pollock. Our readers will remember that during last year Mr. Thompson charged an operator of the name of Tetsch, at Bow Street, with stealing certain negatives, but subsequently withdrew the charge on restoration of the negatives. Subsequently the accused brought an action for slander against Mr. Thompson, based upon this charge. After various delays, the case came for hearing on Thursday, Mr. Arthur Cohen, Q.C., Mr. J. C. Matthew, and Mr. Murphy, being instructed for the defence; Mr. Campbell White appearing for the plaintiff. During the examination of the plaintiff, the Chief Baron remarked that after the decision at Bow Street no action could lie, and recommended the withdrawal of a juror; and this course being adopted, the case came to an end without a verdict.

PHOTOGRAPHIC IRRADIATION.—In the course of some recent correspondence Mr. Stillman, writing in *Nature*, referred to the notion that photographic irradiation was due to reflection from the back of the plate, and mentioned backing and colouring the film as remedies. He added:—"But the most complete (where the dry emulsion process is available) is to allow the collodion to be acted on by a large excess of nitrate of silver for a considerable time, and then to convert this into bromide of silver by addition of ammonium bromide. The result is that the film has a dull opaque character, like unglazed porcelain, and not only stops the light more completely than an ordinary collodion film, but remedies another cause of irradiation—the molecular reflection in the film itself." Lord Lindsay and Mr. A. Cowper Ranyard, writing in response, point out that reflection from the back of the plate is not the sole cause of this defect. They remark:—"When an over-exposed photo-

graph is taken upon an opaque plate a marked fringe of irradiation still remains, and experiments were instituted by us which appeared to show that this is not to be accounted for by any circulation taking place within the thickness of the collodion, or by the chromatic dispersion of the lenses; but when the oblique pencils from the edges of the lenses were stopped out the irradiation fringe was found to be greatly decreased. We were led to conclude that irradiation is to be accounted for by the fact that each luminous point in the object is not accurately represented by a luminous point in the image, but rather by a luminous patch of sensible area, the central and more intense portion of which prints itself first in the photograph, giving comparatively sharp picture prints when the exposure is short; but as the picture is still further exposed, the outer portions of the luminous patches imprint themselves, and by their overlapping cause the blurred appearance to which has been given the name of irradiation."

### To Correspondents.

STUDIO.—We should prefer No. 3, which, as you say, approximates to the model of Mr. Fry. The nearer to north you let it face the better, but north-east will do. 2. We have had no experience with the lens in question.

A SUBSCRIBER FROM THE BEGINNING.—It very often happens that a person not absolutely familiar with every detail of photographic history discovers something which he, in good faith, believes to be original. He hastens to the Patent Office, and enters a provisional specification; but, on discovering that the thing is not new, takes no further steps. This was probably the case in the instance to which you refer.

MARKINGS ON THE PLATE.—The peculiar, irregular markings, of which you send examples, are at times very troublesome, and the cause is not well ascertained. They generally occur with an old bath, and sometimes with a doctored bath. But it is not by any means certain that the condition of the collodion is not conducive for diluting the collodion with alcohol or with thin plain collodion is often found to be remedial. Allow the plate to set well before immersion in the bath, and keep it in motion laterally as soon as immersed. These steps sometimes cure, and generally mend the matter somewhat.

W. R.—You should have described the method by which the transfer was produced, and we could then with more certainty have suggested the cause of the defect. Its probable cause is imperfect washing, some traces of hyposulphite having been left on the film, and this, and probably the action of the toning bath upon it, have caused the discolouration.

A. R. (Hunslet).—The best method of enlarging consists in producing a transparency and an enlarged negative by one of the various methods we have recently described. Many articles were devoted to this subject in our last volume. It would be impossible in this column to give details, and we cannot possibly write private letters on such subjects.

ONE WHO WISHES TO KNOW.—We regret that our information on the subject is insufficient to enable us to give efficient advice. How far a photographic assistant would have a chance of an engagement at all in Japan we cannot say. In the United States there are doubtless many openings; but whether more or better than in this country we cannot say. The same is true of most of the colonies: salaries are probably higher than in this country, but so also are expenses.

NOVICES.—We cannot speak from comparative trial; but we should give the preference to No. 2.

F. W. GER.—The matt silver stains are chiefly due to the use of a horny, repellent collodion; but other conditions will conduce. If you cannot readily change your collodion, adding a few drops of distilled water to that you are using will improve matters. Immersing the plate before it is too thoroughly set will help you. Placing the plate always on clean pieces of blotting-paper, and frequent washing of the inner frames, will help you.

C. KEENS.—Dr. Monckhoven's "Traité Général de Photographie" is published by Masson in Paris, we believe, and may doubtless be obtained through a foreign bookseller. We do not remember the price, but we should think about 15s. A new edition was published last year. A letter addressed to the author, Dr. Van Monckhoven, at Ghent, would doubtless secure you all information.

P. R. C.—We know of no toning bath better suited for giving such warm tones than the acetate bath, containing one grain of chloride of gold, thirty grains of acetate of soda, and five ounces of water. Vigorous negatives form an important element in producing such tones. You cannot secure rich, vigorous prints with fine tones from a poor, flat, foggy negative.

AN OLD SUBSCRIBER wishes to know to whom he should apply for permission to photograph in the enclosure at the camp at Wimbleton. Can any of our readers give the information?

W. C.—Writo to Marion and Co., 23, Soho Square.

Several Correspondents in our next.



## The Photographic News, June 19, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### PHOTOGRAPHY AND BANK NOTES—THE CAMERA IN ENGINEERING—COST OF ALBUMENIZED PAPER.

*Photography and Bank Notes.*—M. Gobert, whose name is known as one of the most active members of the Photographic Society of France, has been visiting this country for the purpose of studying methods of photographic printing other than that of silver employed here. His chief object is to ascertain how far printing with greasy ink has advanced in England, and whether there are any modifications or improvements made use of in England which have not found their way to the Continent. M. Gobert speaks most sanguinely of the state of mechanical printing in Paris, and is very hopeful indeed of comparative perfection in the art being obtained in a little while, in proof of which he cited the fine examples of heliographic printing now being shown at the Photographic Exhibition at Paris. M. Alfred Gobert is an official of the *Banque de France*, which has lately established a photographic studio in connection with its works, and especially as an aid in the detection of spurious bank notes. The camera, it appears, is a much more rigid detector than the human eye, and consequently the photographer's lens is at times put to a use akin to that of a policeman's bull's-eye. Thus, in the case of an erasure on the paper of a bank note, and the substitution thereon, either by printing or writing, of some word or another, although sometimes quite invisible to the eye, this is at once laid bare in a photograph, the lack of reflection, or otherwise, being quite sufficient to make a mark upon the collodion film, which carries at times, too, the outline of the word that has been erased. Photo-mechanical printing is an art, too, which the great Paris Bank proposes to make use of in the printing of their notes, for the progress made of late years in this branch of photography seems to prove that it may be employed with advantage in this connection. In many Continental bank notes, and notably those of Germany, it is the custom to print at the margins, with type of the very, very finest character, a warning to the effect that any one attempting forgery is liable to penal servitude for twenty years; the microscopic nature of the printing being supposed to be the most efficient guard against committing such a crime. In these days, however, of photo-mechanical printing, the production of characters of this minute size would be by no means the most difficult portion of the task to perform in the forgery of bank notes.

*The Camera in Engineering.*—It is really surprising to find how widely photography is employed by engineers now-a-days in taking pictures of new machines and machinery constructed by them. The first step taken by large firms, after constructing a model, is to have it photographed; and so we find large factories, such as Armstrong's, Whitworth's, Nasmyth's, and the like, giving the photographer continual work. At Krupp's factory at Essen, the biggest in the world, probably, where all the German steel artillery and many of the Russian guns are manufactured, there is not only a photographer's studio attached, but work carried on to such an extent as to permit of mechanical printing being adopted, the Albertype process being employed for printing the pictures. Photography used in this way, although it does not do away with draughtsman's work, at any rate lessens the amount of this more costly labour, for in many cases when pictures are taken to scale, the photographs are quite as good for purposes of guidance as a working drawing. There are other instances, again, where photography does what the draughtsman cannot do—where it shows, for instance, the machine complete, and the manner of putting it together—and all this it does in a small fraction of the time required for a rough sketch to be pencilled out. We do not know

whether the suggestion made some time ago to print duplicates of tracings direct through the paper, instead of producing them by hand, is adopted, practically, by any firms; but one would think that, with paper already sensitized at one's disposal, with but the simple operations of fixing and washing to be performed, engineers and draughtsmen would be only too ready to adopt such a rapid and trustworthy manner of copying their drawings and plans.

*Cost of Albumenized Paper.*—The high price of paper, which has of late been yearly increasing, will be felt, we fear, very seriously by photographers who are large consumers of albumenized paper. Unfortunately, the manufacture of their raw paper is in the hands of two or three large firms who have practically a monopoly in the matter. In Vienna, as also in Berlin, an increase in the cost of the paper, as also other circumstances, have caused photographic dealers to advertise an increase of as much as twenty-five per cent. in the price of the albumenized material. The movement seems a very decisive one, and has not been undertaken until after much deliberation, the Berlin dealers actually agreeing among themselves before making the bad news public. As many as eleven large firms have stated their inability to supply albumenized papers to their customers except at the advance of price above mentioned, the well known names of Schippang, Beyrich, Kleffel, and others being among them.

### ON AN IMPROVED DRY PROCESS.

BY M. CAREY LEA.\*

IN reflecting over this process, it occurred to me that silver nitrate was so completely precipitated by albumen that there could be no reason or advantage in this preliminary washing; that, on the contrary, it was probable that a better result would be got by plunging the plate directly into the albumen bath as soon as set.

The importance of this change seemed so great that I first experimented with it in the following manner. An emulsion was taken with a very large excess of silver nitrate, an excess of ten or twelve grains to the ounce. This large excess was to make the trial more decisive, and for the same reason the plate was coated twice, so as to get a very thick film with a large quantity of silver nitrate. A solution of albumen was prepared, which, to increase the severity of the trial, was made very dilute, one per cent. only of albumen dissolved in water, half a drachm of albumen to six ounces water. Into this the plate was plunged as soon as set. It was taken out when the greasy lines had disappeared, and the bath was tested for silver nitrate. None had been removed from the plate, and this was also the case (or only the very faintest infinitesimal trace) when the plate had been left in some time longer. All the silver had been converted into silver albuminate within the film, so that evidently the previous washing as always hitherto practised could be dispensed with advantageously, at least with an albumen preservative, because in this way a larger quantity of organic insoluble silver salt was retained inside the film. The above trial was made by daylight.

Experiment with plates prepared in the dark, and exposed in the camera, gave the fullest confirmation of the expectations I had formed: in fact, the gain was much greater than I had ventured to hope.

So that now I conclude that when albumen is used, the washing of the plate is just as injurious and unnecessary as would be the washing of an ordinary wet plate before plunging it into the silver bath. The wet and dry processes are thus brought curiously together, for in both the plate is collodionized, and then simply plunged into a bath, and is then finished. The albumen plate may be either dried or used wet; when wet it is even more sensitive than when dry.



The simplification obtained in this way is sufficiently evident, and the diminished trouble in making the plates, also the difficulty about pure water for the washing. But these considerations are very unimportant compared with the gain to the plate itself. The advantages are:—

1. It is much more sensitive. With an equal exposure the development is over in one-fourth the time, and with one-fourth as much ammonia carbonate.

2. The irradiation and blurring are greatly diminished. Small dark objects projected against a bright sky are depicted clean and sharp. Small leafless twigs in deep shadows standing against a bright sky, instead of having an indistinct and blurred effect, come out as sharp as if they had been cut in the film with an engraving tool.

3. There is better detail in the deep shadows, and more variety of half tone.

4. Much less tendency to spots and pinholes.

I shall now proceed to give the formulæ. Besides the introduction of albumen to the emulsion process, and the change respecting the washing, I have found several other improvements which promise to be valuable. I find an advantage in adding cobalt chloride to the collodion, and an alkaline nitrite. These two changes are of less importance than those previously mentioned. They are not essential, and may be omitted, but they have their utility, and I prefer to employ them. Another change of more importance is the following. In processes in which albumen has been used, it has hitherto taken the place of other preservatives. I use it in connection with them—that is, with gallie, pyrogallie acid, gum, &c.

#### COLLODION.

Dry cadmium bromide ...	200 grains
Ammonium bromide ...	48 "
Pyroxyline ...	240 "
Ether ...	20 fluid ounces
Alcohol ...	12 "

To this may be added with advantage:—

Cobalt chloride ...	32 grains
Potash nitrite ...	32 "

Potash nitrite dissolves with some difficulty in alcohol. Half the twelve ounces of alcohol should be appropriated to dissolve the nitrate, the other salts to be dissolved in the other half. Keep the collodion in a warm light place for a month. Without the right sort of cotton a total failure will result, or at least only a partial success. The best pyroxyline I have had was made for me.

When it is intended to prepare an emulsion, three or four ounces of collodion are taken, and to each ounce two drops of aqua regia are added. (Aqua regia is easily prepared by adding half an ounce of nitric acid to an ounce of hydrochloric in a stoppered vial, and setting in hot water until the mixture turns orange colour.)

The silver nitrate in fine powder is weighed out, taking twenty-three grains to each ounce of collodion (if the cobalt chloride and potash nitrite are used, then twenty-five grains silver nitrate). This is dissolved in alcohol. To do this take a large test-tube capable of holding about three ounces, so that the alcohol may occupy but a small space at the bottom, and be in no danger of boiling over. Cover the powdered nitrate with alcohol about an inch deep. Boil over a gas flame, shake, boil again, and after a couple of minutes, pour this into the bottle of collodion, and instantly shake well for a couple of minutes. Pour a rather less quantity of alcohol over the residue in the test-tube, and repeat. The third time ought to finish the solution, but if not a fourth may follow. The shaking is much more effective if a bottle of such size be selected that is only about one-third filled. Of course it must be wrapped in opaque yellow paper.

After about ten or twelve hours it will be ready for use. In the middle of this interval it should have one more good shaking. Just before using it should be filtered through sponge or fine close linen. The plates should be

edged with india-rubber dissolved in benzole, the edging along the sides not quite meeting that at the ends, but leaving an opening for the escape of water under the film. To get an even coat, pour on plenty, carry it over the plate quickly, and in rocking raise the far end but little, and slowly. These three rules will be found very useful.

As soon as set, plunge directly into the preservative bath.

#### Preservative Bath.

Water ...	8 ounces
Gum and sugar solution ...	10 drachms
Prepared albumen ...	5 "
60-grain solution of gallic acid in alcohol ...	3 "
60-grain solution of tannin in water	3 "

The tannin may be used, or left out. The ingredients must be added in the above order, or a flocky precipitate may be produced, which ruins the bath, even if filtered out.

*Gum-sugar Solution.*—Dissolve half a pound of good gum arabic and three ounces of white lump sugar in forty-four ounces of water. Add one and one-half fluid drachm of carbolic acid to make it keep. Shake well, and filter.

*Prepared Albumen.*—To the whites of five eggs add an equal bulk of water, and a quarter-ounce of acetic acid No. 8. Shake well, and filter through sponge.

*Backing.*—It is best to back the plates. Take one quarter-pound annatto, three ounces water, one quarter-ounce glycerine, one half-draehm carbolic acid. It will take about two days for the annatto to soften in the water, and mix up to a thick paste, to be applied with a brush. If the paste, by standing, dries too thick for use, add water, but no more glycerine.

*Development.*—For a whole size plate, take a 7 by 9 pan, put in four ounces of water, and half a draehm of sixty-grain alcoholic solution of pyrogallie acid. Put the plate in (having previously removed the backing by sponging), leave it for a minute, then take it out, and put into the pan one half-draehm of a fifteen-grain solution of potassium bromide, and half a draehm of eighty-grain solution of flinty (not powdery) ammonium carbonate. If the exposure has been sufficient, this will presently bring up to printing density; if not, add a little more carbonate. If any trouble is experienced in getting density, it is better to re-develop with citric acid and silver, either before or after fixing. If the image is very faint, re-develop as before; but a weak image indicates bad materials, or some mismanagement.

*Fixing.*—Very weak hyposulphite, one ounce to the gallon.

The negatives obtained by this process are not only excellent in quality, but very attractive in appearance—much more so than ordinary dry plate negatives. In actual practice, the process is very easy and pleasant to work.

### ON THE GELATINO-BROMIDE PROCESS, WITH A DESCRIPTION OF AN EASY METHOD OF WORKING IT BY USING THE "SENSITIVE PELLICLE."

BY R. KENNETT.\*

THE general subject of "gelatine as a vehicle for silver salts in the production of negatives" having been introduced by Mr. King's interesting paper, I propose to follow up the subject by describing the method that I employ. I may mention that the use of gelatine as a substitute for collodion is a matter to which I gave serious attention many years ago. I have always been interested in experimental photography, my first commencement being with Daguerreotype nearly thirty years since. I have taken interest in, and have worked at nearly all the various pro-

\* Read before the Photographic Society of London.



cesses that have arisen since that time, always as an amateur. Among other of the old methods of preparing dry plates, that of Dr. Hill Norris particularly interested me. I was convinced that most of their excellent qualities, and especially that of their certainty, and the long retention of their sensitiveness, were due to the final coating they received of gelatine. I thought that if this material played so important a part, why could not the collodion be dispensed with, and gelatine be used exclusively? I was an early worker in Major Russell's tannin process, and when he took to using a bromide process exclusively I tried his method, but I used gelatine only, and I formed the bromide of silver in an emulsion of this material, much as we now do. I also added iodides and chlorides to the bromides: I used the acid pyro developer at first, but I finally settled down to the alkaline method when Major Russell showed its superiority. Of course I had no end of failures in trying to work out a process in this new direction; but a serious illness of six years' duration stopped all my photographic experiments. As a worker, therefore, in gelatine, I do not appear as a novice, but rather as a veteran.

My interest in the subject was revived about this time last year, when Mr. Burgess, of Peckham, announced the sale of his gelatino-bromide emulsion. I obtained some of it, and I immediately recognized a similar preparation to that I used to make some years previously.

On referring to my old note-book in which my experiments were recorded, I found a formula by which a sensitive emulsion could be made similar to Mr. Burgess's. I showed the preparation and negatives obtained with it to Mr. J. T. Taylor, and promised to publish the formula. As Mr. Burgess was then deriving some benefit from the sale of his emulsion, I did not then, in deference to his wish, publish my method. I thought also I might make some further improvement in the only weak part of the process, the preparation of the emulsion, so as to enable it to have keeping properties.

Since then I have followed up my experiments, and although I have not discovered a method of preventing the prepared sensitive emulsion from spontaneous decomposition, yet I believe I have done something better; for I have discovered a means of preparing the gelatine so that in a dry state it shall contain the sensitive salt. The material can therefore be purchased in a state ready for use by dissolving in warm water; and in this dry state it will keep good for years. My object in this paper, then, is not only to show that the gelatino-bromide process is a really good working process, but also to prove that the only troublesome part about it—the preparation of the emulsion—may be avoided by obtaining, as an article of commerce, the material ready for use. In former times it was the custom, much more than it is now, for photographers to prepare their own chemical compounds. It is now found that these things can be better done by people who make it their special occupation; hence photographers now rarely prepare their own collodion, make their varnishes, albumenize or salt their papers. Such being the case, I do not believe that it is sufficient to merely describe how the materials are to be prepared, in order to get a new process into general use.

Different methods have been published by Dr. Maddox, Mr. King, Mr. Bolton, and others, of forming a gelatino-emulsion. It is not so difficult to make as a collodio-emulsion, as all the solutions are aqueous ones; yet it requires care. Any good gelatine will probably do; but my experience is with Nelson's, which answers admirably.

I take one pound of this gelatine and place it in a porcelain dish, to which I add 100 ounces of distilled water, and allow it to stand and swell for about three hours. It is then heated by a hot-water bath until dissolved. While hot, 8½ ounces of bromide of potassium are next added, which must be thoroughly incorporated with the gelatine by stirring, and 11¼ ounces of nitrate of silver,

dissolved in as little water as will take it up, are then added, and the whole well mixed while the gelatine is still hot.

When the silver is added, all the subsequent operations must be done in a non-actinic light; and the material thus formed constitutes the sensitive emulsion. It is not, however, in a condition ready for use, as it contains free bromide of potassium and the nitrate of potash formed by double decomposition. These salts must be removed, or else they will form crystals in the film, and spoil the plate. Mr. King removes these salts by the scientific process of *dialysis*; I proceed in a different way. I pour the emulsion into a porcelain dish to the depth of about a quarter of an inch, and let it become cold and set. I then cut it into small strips, and wash in many changes of water, or use running water, just like washing prints from the hypo, until all the free bromide and nitrate of potash are dissolved out. The material is now in the condition to be dissolved in hot water ready to coat plates with; and if no greater quantity is made than can be conveniently used at one time, the plates can at once be prepared and the emulsion used up; but unless the material can be so used immediately, it cannot be depended on. I have sometimes, in cold weather, been able to keep it good for a fortnight, and in summer time I have known it to decompose in a few hours. It is true that many things may be added—such as carbolic acid or alcohol—to arrest the tendency to decomposition, but in my experience there are other drawbacks which accompany these additions, and my decided impression is, that no such attempt should be made, but that the emulsion should be at once used by coating the plates, and then, when dry, the plates will keep good for years.

To obviate the necessity of thus immediately using up the prepared emulsion, my invention comes in. I take the concentrated emulsion, after it has been well washed from the removable salts, and place it in suitable dishes, evaporating the emulsion till it is of the consistency of thick paste. I then let it cool, and, removing it from the vessels, complete the drying on suitable frames. When dry, it can be cut into portions of convenient size, and in this condition is ready for immediate use by simply dissolving in hot water. As much or as little may be dissolved at one time as there are plates to be prepared; but as the plates will "keep" indefinitely, there is no need that any should be lost, if sufficient plates be ready to use up the dissolved material.

This dried sensitive material I have called my "sensitive pellicle."

To use the "pellicle," the quantity necessary to coat the number of plates proposed to be used is dissolved in the proper quantity of water according to the directions that accompany each packet. When thus dissolved, the emulsion is in exactly the condition as if the person had originally made the preparation himself. All the subsequent operations are just the same as are given by Mr. King and other workers of the process.

My mode of working is this: I slightly warm the plate, pour enough of the warm emulsion to make a pool in the centre of the plate, and with a glass rod guide the material to the edges, pouring the surplus back. The plate is then placed on a level surface—a shelf, for instance—to dry. If prepared at night, the film will spontaneously dry by the next morning.

You will observe that there is no preliminary coating of the plate required, no after washing necessary, and no "organifier" or preservative solution to be floated on, or washed off. The gelatine is its own "organifier," and the plates will keep indefinitely if preserved from light and moisture.

The exposure required is certainly not more than for the most sensitive wet collodion. Nearly all the failures from the use of this material that have come to my knowledge have arisen from an under-estimate of this sensitiveness.



They have been from either too much light in the dark room, or from over-exposure in the camera.

After exposure the plate is soaked in water for a short time, and the usual alkaline developer is applied; the image comes out quite as quickly as on an ordinary wet plate. Sometimes a little intensifying is necessary; this may be done before or after fixing in the hypo. The greatest care is necessary not to carry the intensifying too far, as the colour of the deposit is so much more non-actinic than collodion negatives. After washing from the hypo the film dries spontaneously in about the same time as a collodion one; but heat may be used to hasten the drying. When dry, the film is sufficiently hard that the negative may be printed from without varnishing. If the negatives be intensified too much, the surplus intensity can easily be removed, and if not intense enough, fresh vigour can as easily be added.

In conclusion, and before I commence my demonstration, let me urgently call on you to give this gelatino-bromide process a fair trial—whether you use my pellicle, or prepare the emulsion for yourselves.

I believe it to be the easiest, the quickest, the cheapest, and the least destructive to the health of all the various means by which negatives can be produced. The general process is free from all restraint; the only part I claim for myself is my own invention—the drying of the emulsion, and the capacity of thus keeping it in a dry state ready for immediate use.

#### A FEW NOTES ON ALKALINE DEVELOPMENT.

BY COL. STUART WORTLEY.\*

I HAD intended, when offering to read a paper on the above subject to the society, to have developed a series of negatives and transparencies before you at the time of reading the paper; but as there are already two papers that have precedence of mine, I fear that time would not allow of my doing so this evening. There is one point in particular to which I desire to call the attention of dry-plate workers, as I find from various communications that I have received that it is one that has not hitherto been sufficiently considered.

It will be remembered that last year I brought out the strong alkaline developer, and ventured to point out that the photographic world had, in confining themselves, as they had hitherto done, to a very weak alkaline developer, sacrificed at least three-fourths of the sensitiveness of any dry plates that they have may been happening to use.

My friend Mr. R. M. Gordon was so struck by the results obtained by me that he at once adopted my method of developing, and has published his testimony to its value; and I believe that all dry-plate workers who have given the subject their attention have also adopted the strong developer in their work.

Now I find that dry-plate workers, whether using a weak or a strong alkaline developer, have not given sufficient consideration to the fact that where a negative requires an extra dose or two of ammonia to bring it out, it is most desirable, if not indeed necessary, that a drop or two of strong pyrogallie acid solution should be added with each addition of ammonia. The reason of this would appear to be that the original amount of pyrogallie acid used with the developer becomes exhausted, and added ammonia having then no pyrogallie acid to assist its work, only produces surface-fog instead of continuing to develop the negative.

It should also be remembered that the amount of pyrogallie acid used at the commencement of the development has a very great effect upon the density of the resulting negative, and it is a most interesting experiment to make, to cut a plate in half after exposure, developing one half with one minim to the drachm of pyrogallie acid, and the other half with six minims to the drachm of the same solution; this will show clearly the very great power we have of

obtaining negatives of different character with alkaline development; and I may here take the opportunity of pointing out that, to properly develop a transparency, a small amount of pyrogallie acid only is essential, as otherwise the shadows block and become too dense and hard. I should have liked to have gone much more in detail into this subject had time permitted, but I will conclude by giving a formula for strong and very portable solutions for those who are travelling about with dry plates:—

No. 1.—Pure strong carbonate of ammonia	80 grains
Water	1 ounce
No. 2.—Bromide of potassium	120 grains
Water	1 ounce
No. 3.—Pyrogallie acid	96 grains
Alcohol	1 ounce

To each drachm of No. 1 add one minim of No. 2, and from one to six minims of No. 3, according to the density of the negative required, remembering that it is always well not to have too much pyrogallie acid in the developer to begin with, in case strongly lighted objects should thus come too dense at first; whereas, if we begin with from one to two drops of pyrogallie acid to each drachm, any amount of density can gradually be obtained by continued additions of two or three drops at a time of the pyrogallie acid solution.

If it is desired to replace the carbonate of ammonia by liquid ammonia, make up the developer with distilled water instead of the carbonate of ammonia solution, and to each drachm thereof add, as before, one drop of No. 2 and the necessary amount of No. 3, and pour two or three times on and off the plate; then add to the developing solution strong liquid ammonia (specific gravity 880) in the proportion of two minims to each three minims that has been used of the bromide solution. The two formulæ will then stand thus for a stereo-sized plate:—

#### Carbonate of Ammonia Development.

80-grain solution of carbonate	3 drachms
120-grain solution of bromide of potassium	3 minims
96-grain solution of pyrogallie acid (say)	6 "

#### Liquid Ammonia Development.

Distilled water	3 drachms
120-grain solution of bromide of potassium	3 minims
96-grain solution of pyrogallie acid (say)	6 "

Pour off and on, and then add strong liquid ammonia, 880-2 minims. If more density is required, add more pyrogallie acid; if more detail wants to be brought out, add more ammonia, and some pyrogallie acid therewith.

I feel sure that no one who gives this method a fair trial will return to the use of a weak alkaline developer; for while, by the strong developer, the sensitiveness of the plate is immensely increased, the chances of a plate fogging are infinitely less than with the old-fashioned weak developer.

It should be noted that this system of development is suited to gum gallic, tannin, beer, and other bath plates, as well as emulsion plates.

I show two negatives of different densities.

#### GELATINE AS A VEHICLE FOR SILVER SALTS IN THE PRODUCTION OF NEGATIVES.

BY JOSHUA KING, M.A.\*

THOUGH the use of gelatine as a vehicle for the salts of silver sensitive to the action of light was suggested as early as 1869 by Dr. Maddox, and the problem of its successful application was solved last year very completely by Mr. Burgess, of Peckham, no formula or method of working has been hitherto submitted to the criticism which a body constituted, like this society, both of

\* Read before the Photographic Society of London.

\* Read before the London Photographic Society.



scientific experts and skilled manipulators, can bring to bear on such subjects. Nothing as yet has been done to elicit an authoritative opinion as to the value of the innovation; and as those who have placed their preparations of gelatine in the market have naturally kept their secrets to themselves, the only point which societies have had to discuss hitherto has been the merits or shortcomings of the negatives produced by their aid. Under these circumstances it has been suggested to me that as I have published the results of my experiments, which have led me to a process moderately simple and certain, I should invite the society to give an opinion on my method, in the hope that discussion may settle the question as to the value of gelatine when used as a substitute for collodion.

I come before you, therefore, not as a successful inventor, but as a modest enquirer; and in this character I hope that, though the cause I plead for may fail to secure your verdict, the failure may not be credited to the presumption of the advocate.

The only combination I have at present tried is that of gelatine and bromide of silver. I had practised Mr. Carey Lea's chloro-bromide process in India, and have become a convert to the emulsion school of dry-plate workers. My first trials with Burgess's gelatine plates were successful, and I thought I recognised in the negatives a delicacy and softness not often seen in dry-plate work; but with the second batch of plates I was not so fortunate, and this failure induced me to attempt to prepare gelatine plates myself. Following in the tracks of Dr. Maddox and his disciples, I made trial of various proportions of gelatine in solution with ammonium or potassium bromide, and sensitized by equivalent weights of silver nitrate. But though I succeeded in getting sensitive films and a bright image with a very moderate exposure, all my negatives at this stage were useless, because the nitrates with which the emulsions were loaded crystallized out on the surface of the plates, and covered them with a web of seams and scars. I then tried a plan recommended by Mr. Sutton as likely to succeed; and having obtained my bromide of silver, by precipitation from aqueous solutions, I added it to my gelatine solution; but the result—possibly owing to my want of skill—was worse than the original failures: the mixture refused to emulsify properly, and the images were feeble and fogged.

While thus perplexed, I happened to remember that the process of dialysis would separate crystalloid from colloid bodies, and having Griffin's "Chemical Handicraft" by me, I consulted it; I had had no previous experience with the process myself, so I was startled to find that twenty-four hours were spoken of as the time necessary for an operation, and as gelatine was a substance with the peculiar properties of which I was little acquainted, I mentioned the matter to Prof. Living, and asked his advice. He told me at once that dialysis would serve me, and that four or five hours' diffusion would do all that I wanted. He also kindly explained to me the uses of the apparatus, lending me one of his own to begin experiments with. After one or two trials with a makeshift dialyser, which I contrived out of a wide-mouthed bottle, and with which I cleared the remains of some old emulsions which I had by me, to my entire satisfaction, I dialysed an emulsion made as follows:—Forty grains of gelatine were soaked in fourteen drachms of distilled water for four or five hours. Solution was then effected by heat, and twenty-one grains of potassium bromide were added to the dissolved gelatine. Thirty grains of silver nitrate dissolved in one drachm of distilled water, to which, after solution, three drachms of rectified alcohol were added, were placed in a glass vessel, and the warm browned gelatine was poured in a slender stream into the silver solution, the mixture being stirred actively with a glass rod. The resulting emulsion, which had a slight opalescent tinge, was poured into the dialyser and submitted for about four hours to the action of com-

mon spring water at a temperature of about 100° F. to begin with, the apparatus being placed near a fire, so that the gelatine might not become chilled during the operation.

Plates coated with this emulsion, which was milk-white, dried during the night, and in the morning showed no signs of crystallization, except about the thickened edges. Tried in the camera they were about as sensitive as the Burgess plates, gave fair printing density under alkaline development alone, with good details and freedom from fog.

I do not think that the proportions I have given are the best possible, but I have not been able to carry on any experiments with a view to modify them; and as the formula has given me good plates without a failure, as far as sensitiveness and brightness are concerned, I do not complain of it. I ought, however, to confess that I have sometimes been troubled by the film blistering and leaving the glass at the edges during development, and that I am somewhat at a loss to account for this mishap.

There can be no doubt that the tendency to blister will be found if the plates are developed before they are thoroughly dry, and the remedy is then obvious; but I have also remarked it in plates where the films were apparently in excellent order, and it has puzzled me greatly.

In such cases the blistering commences in, and is almost entirely confined to, portions of the plate either protected by the rabbet of the slide from the action of light, or exposed to its feeblest radiations; and I have found it a good plan to mask the negative after exposure, leaving a margin uncovered, and in that condition to expose it to strong light, which is tolerably effectual. This, however, is but a makeshift expedient, and I only mention it because it involves a question which is worth investigating with reference to the properties of gelatine, viz., whether the light acting on gelatine in combination with the haloid salts of silver does not in some way affect the tendency of that substance to absorb water.

I was at one time inclined to think that if the gelatine mixture becomes too much concentrated by evaporation, this disposition to blister is developed, and that a reduction in the initial strength of the solution would be a safe modification; but the few experiments I have had time to make have not confirmed this view. At all events, the difficulty appears to be purely mechanical; and though it has embarrassed me, I have no fear that the remedy will not be forthcoming as soon as the cause of the disease is ascertained.

It seems unnecessary for me to trouble you with any elaborately detailed account of the method I use for coating and drying the plates. There are manipulatory difficulties to be met in coating which will suggest themselves to every operator; but they are more formidable in theory than in practice, requiring a little knack and neatness to overcome them, but yielding readily to patience and perseverance. I use a glass rod to enable me to get an even film, and place the coated plates on a level shelf till the films are sufficiently set to allow the glasses to be reared up without disturbing the evenness of the coating, which takes some hours. I tried drying then in a box fitted with horizontal grooves about half an inch apart, into which the plates were slid ten minutes or so after coating, and in the bottom of which I placed a saucer of chloride of calcium; but I found that the evenness of the film was destroyed by the imperfect level of the plates in the box, and drying was a very slow process indeed; still I think that something of the sort might be devised, and the matter might usefully exercise the ingenuity of the numerous practical men to whom we owe so much of the compactness and efficiency of our present apparatus. The box must be of rather large dimensions; but it might be utilized as a packing-case when not employed upon its proper functions.

(To be continued.)



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## GELATINE AS A SUBSTITUTE FOR COLLODION.

The idea of using gelatine as a vehicle for the sensitive salts of silver is an old one. Considerably upwards of a dozen years ago, M. Poitevin published details of several interesting experiments in this direction. Upwards of nine years ago we formed an emulsion of chloride of silver in a solution of gelatine; but finding a tendency in the film to dissolve in the fixing bath, we did not follow out the process. Subsequently a successful gelatino-chloride of silver process was published by Mr. Palmer, and a similar process was patented by Mr. W. H. Smith. The use of a similar emulsion of bromide of silver for producing sensitive dry plates which has for some time past excited attention was very prominently brought before the Photographic Society at its last meeting, when two papers on the subject were read.

Mr. King's paper is an interesting record of the effort of an enthusiastic amateur in overcoming the difficulties inevitable in working in a new path with few landmarks to guide him. The chief difficulty he experienced consisted in getting rid of the by-product resulting from the formation of an emulsion by a process of double decomposition. This mode of forming the emulsion is obviously the most easy and perfect, but unless the soluble nitrate of potash—formed when bromide of silver is obtained by adding nitrate of silver to bromide of potassium—and any free nitrate of silver or bromide of potassium which may be present, are removed from the emulsion, the dry plate is covered with crystals, which necessarily mar the negative. The removal of all crystallizable salts, it will be seen, must be removed from the emulsion, and at first sight this presents a serious difficulty. The plan of preparing the bromide of silver first, and then mixing it with the gelatine, was found impracticable. Mr. King then tried the process—very obvious and natural for the purpose—of dialysis. Our readers know that this process presents a ready and certain method of separating colloid, or gelatinous, and crystalline bodies, and hence the soluble crystalline salts left in the gelatine after bromide of silver had been formed by double decomposition were completely removed. But this process is slow and tedious, and, as Mr. Kennett observed at the meeting, for all practical purposes useless.

To meet the difficulty in a simple and perfectly practical manner, Mr. Kennett comes forward with his process, and although it is patented, its results are offered to photographers on terms which must preclude the thought of objection, to any reasonable man. Mr. Kennett, like Mr. King, forms his bromide of silver in the gelatine by

adding solutions of nitrate of silver and bromide of potassium in as nearly as possible their combining proportions. He gets rid of excess of either, and of the nitrate of potash formed, by a very simple process. He forms it into layers about a quarter of an inch thick, and allow it to set, then cuts it into strips, to expose as much surface as possible, and washes it in cold water, which, without dissolving the gelatine, removes soluble salts. It may then be used at once, or it may be dried, and preserved for use at any time, on redissolving by the aid of hot water. It will be observed that the final aim of the process is to obtain a film of pure bromide of silver, without excess of either bromine or silver, in a film composed of an organic substance capable of forming organic combinations with silver salts. Such a film is found in practice to be as sensitive as a film produced by the ordinary wet collodion process; and in the dry form, kept preserved from light, moisture, or other disturbing causes, the sensitive pellicle may, it would seem, be kept indefinitely. In this state of dried shreds it is supplied by Mr. Kennett to photographers, and, from the majority of the accounts we have heard of it, is found to work well and satisfactorily, yielding negatives of great delicacy.

But for those photographers who prefer to prepare their own materials Mr. Kennett's method furnishes a simple suggestion as to the best method of getting rid of crystallizable salts. After preparing an emulsion by dissolving the soluble bromide and nitrate of silver, in as nearly as possible their combining proportions, in a solution of gelatine, and preparing plates with the emulsion so obtained, it will only be necessary, after allowing the film to set well, to place the plates for a short time in water, or even to rinse well under a tap, to get rid of the soluble salts—just as Mr. Kennett gets rid of it from his pellicle by washing after it is set. A comparatively slight washing, it is probable, will remove sufficient of the salts to prevent crystallization on the surface. In our own early experiments with an emulsion of chloride of silver in gelatine, we rarely found any difficulty with crystallization, but frequently found the film dissolve in the hyposulphite fixing bath. In occasional instances this has been found to occur, we believe, with gelatino-bromide films. In preventing this, much will depend on the quality of the gelatine, and it is probable that the sample prepared by Nelson expressly for photographic purposes will be found to meet the difficulty. In the method patented by Mr. Smith, he was in the habit of allowing the gelatine used for his emulsion to decompose until it had lost the ready power of setting, and drying the coated plates by the aid of considerable heat in an oven, after which he never found the film to dissolve in fixing or washing.

Mr. Kennett's method presents facilities for working of so simple and desirable a kind that few dry-plate workers, we fancy, will fail, at least, to try his process. That there remain some difficulties to meet in a new process is a matter of course. In one instance an eminent foreign photographer writes to us that he has failed to secure an image of any kind by the process. An explanation of such failure will, doubtless, be found, and we hope shortly to investigate the special case and the special material used. Other difficulties have also been found, and have been overcome. We shall be glad to aid in establishing the process in its real place in photographic operations by giving publicity to the results of experiments of any of our readers.

## ENERGETIC DEVELOPERS.

THE discovery and application of more energetic developing agents than those now in use presents to the photographic experimentalist one of the most promising and useful fields for research. Gallie acid, pyrogallie acid, and the salts of iron, and occasionally combinations of two of them, were for many years the sole agents used in developing the latent image. Something like ten or a dozen years ago,



some fine instantaneous stereoscopic negatives on dry plates were produced, as we were informed in confidence, by means of a developer consisting of a saturated solution of gallic acid which contained, in addition, twelve grains of pyrogallic acid to each ounce. The first great advance in dry plate development was made, however, when Mr. Leaby discovered the principle of alkaline development by using ammonia. Since then the method has been worked out, systematized, and improved by various dry plate workers, but by none more effectually than Col. Stuart Wortley, whose discovery of the value of solutions of ammonia of a strength before undreamed of was one of the most marked steps of progress in this direction. A note presented by the same gentleman at the last meeting of the Photographic Society is suggestive of further improvement in the increased power it places in the hands of the photographer. By the use of the concentrated solution of ammonia, the power of obtaining perfect detail with considerably decreased exposure was secured. He now points out—and he verified his statement by exhibiting admirably illustrative negatives—that, by properly varying the proportion of pyrogallic acid to the increased ammonia, enormous control over the intensity of the negative is obtained. To secure brevity of exposure and fulness of detail, full doses of ammonia must be employed; and to secure vigour and intensity, the proportion of pyrogallic acid must be used. One of the greatest points of importance in connection with these advantages in development is found in the fact that they are applicable to all kinds of dry plates suitable for alkaline development, and are not confined to emulsion plates only.

#### FURTHER EXPERIENCES WITH THE PLUMBAGO PROCESS.

BY WALTER WOODBURY.

SINCE writing my last article, I have made some further researches in this useful method. The greatest difficulty I experienced was, the getting the glass into such a state that the film should take evenly all over it. No matter how chemically clean we get the glass, there still seems a tendency of the solution to leave it in patches. To obviate this, I now proceed in another manner, which, besides getting over this difficulty entirely, possesses other advantages.

I take the glass (in this case extra cleanliness not being so much an object) and coat it with a thin, porous, plain collodion. When thoroughly set, I wash it under a tap until all greasiness disappears. I now let it drain on blotting-paper for a short time, and having taken a small quantity of the sensitive solution, freshly filtered, I pour it over the plate several times, each time from an opposite corner. After draining for a short time, I dry it over a Bunsen, expose, and develop it in the usual manner. When sufficiently developed, I coat it again with collodion, but this time with a much thicker sample, and, having levelled it, leave it to dry. When this has been accomplished, I place it in a bath of water acidulated with hydrochloric acid, when, after a short space of time, the film detaches itself from the glass, and should be placed between blotting-paper till dry. The coating of the sensitive gum solution prevents the thick collodion from dissolving the thin, the image being protected on both sides. I think this a far better method of getting a reversed negative than running the risk of removing from its support a valuable negative; and as plate glass must be used in this method of reproducing negatives, the extra time and trouble of removing them is less than the value of the plate glass, besides the advantage of being able to print from either side.

The same principle by which the plumbago negatives are made has been utilized by my friend Mr. G. Whitfield for strengthening ordinary negatives, and, from my own experience, I think this will prove a very valuable appli-

cation, as the intensifying may, so to speak, be localized, and effects got that could not be obtained by the ordinary methods of re-developing. Having taken a negative, and developed with iron, allow the superfluous moisture to drain away, and proceed exactly as I have described in the earlier part of this article—that is, coat with the sensitive solution, dry, and expose to light. The black-lead may then be applied until the desired effect is produced—the most work being laid on a weak foreground, for instance, and the least on a delicate sky, thus avoiding that want of harmony so often found in a negative re-developed in the ordinary way. It must be borne in mind that the black-lead process will not bring out more detail, which may be often accomplished by silver re-developing, although I have noticed that details in the blacks that could hardly be observed were made to show plainly.

#### IODIDE OF SILVER IN THE DIPPING BATH.

BY DR. H. VOGEL.\*

IN continuation of my paper "on sensitiveness,†" I propose now to cite a few examples of how one and the same formula will yield perfectly different results in the hands of different operators, and how the slightest of modifications are capable of bringing about the widest discrepancies in one's work.

For the last seven years I have employed a formula for the preparation of collodion for my own private use. From different sides I have been asked for information on the matter, and I have given particulars to all who desired them. Many practical photographers in Berlin worked with it successfully, and at last I published the whole proceedings. I will give the formula here.

Eighteen grammes of iodide of cadmium were dissolved in 270 cubic centimetres of alcohol, and seventeen grammes of bromide of cadmium likewise in 270 cub. cents. of the same. Both solutions were filtered, and five parts of the iodized salt solution were mixed with one part of the bromine salt solution (the quantities taken by measure), and eighteen parts of normal collodion made with two per cent. of pyroxyline were added. The collodion was then ready for use.

I am far from putting this collodion forward as a universal instantaneous collodion. I only wish it to be understood that it has given me good results, whether as regards the clearness and detailed character of results, or the sensitiveness of the film. It has, too, been kept for years in the studios here.

Lately a gentleman in the provinces whom I knew to be a most skilful photographer informed me that he had also essayed my collodion, and could make nothing of it. It yielded, so he said, too thin a film, was probably too weakly iodized, gave no vigour to the picture, &c., &c. In proof of these complaints some plates were forwarded taken with my collodion, together with others produced with a commercial sample of instantaneous collodion, for the purpose of instituting a comparison. The sight of these was enough to make anyone blush. The images prepared with my collodion were grey and flat; those with the other brilliant and vigorous; and the assurance was appended that both collodions were worked in the same silver bath, with the same developer, and the same intensifier. It availed nothing sending my correspondent a collodion prepared with my own hands, which had given me brilliant results, for the defects still remained; until one day, travelling in the neighbourhood, I visited the gentleman in question, and prepared some plates in his presence.

At once the cause of the error proclaimed itself. The plates prepared with my collodion came perfectly pale and exhausted from the sensitizing solution, and it was clear that the dipping bath contained very little iodide of silver, and it was for this reason that it attacked the film. I

\* Photographisches Notizen.

† See PHOTOGRAPHIC NEWS 29th May last.



asked here how he iodised his bath, and he told me by leaving a collodionised plate in the freshly made-up solution during the night. This method of iodising is one very frequently employed, but it is not a very trustworthy one, for no one knows how much iodide of silver goes over from the film into the bath. Such rule-of-thumb practices I do not like. I always want to know the constitution of my bath, and for this reason I iodise the silver solution in the following manner. I take—

Nitrate of silver ...	100 grammes
Water ...	1000 "
Iodide of cadmium solution	25 cub. cents.
Nitric acid ...	3 drops.

The iodide of cadmium solution is made up of one part of iodide and a hundred parts of water.

The nitrate of silver is in the first place dissolved, and the iodide of cadmium solution is then added while the liquid is being thoroughly stirred. A precipitate is at once formed on the addition of the iodide, but this soon disappears again. The bath thus obtained is about three-quarters saturated with iodide, and any attack upon a collodion plate is no longer to be feared.

I at once prepared a bath of this kind, and forthwith proceeded to sensitize a collodion plate of my own with this solution. It turned out faultless, thus affording proof how a very small circumstance, as the silver bath lacking a slight quantity of silver iodide, is sufficient to make the obtaining of successful results impossible. When commercial collodions do yield good negatives in such baths, it is because they contain, as a rule, a large proportion of sensitising salts. For this reason they sustain an attack from the dipping bath with greater impunity, for there still remains always sufficient iodide of silver to give an intense image.

In time, of course, matters alter. Gradually the bath, after a series of plates have been dipped in it, becomes more and more saturated with iodide of silver, and at last it contains so much that the plates are not attacked, but, on the contrary, become denser, the iodide of silver precipitating upon the film.

The condition of the plates is then totally different to what they were when the bath was fresh, and eat into the collodion film. Such great contrasts are not met with when a moderately salted collodion, and a bath prepared accordingly to my formula, are employed. Both extremes are then avoided, for the super-saturation of the bath with iodide of silver comes on more slowly with a collodion containing less sensitizing salt.

Many misconceptions arise, too, in respect to the quantity of iodide of silver contained in baths which have been renovated and doctored. It is customary to precipitate a portion of the iodide of silver by dilution with water. The more water is added, the more iodide of silver is thrown down. Not unfrequently, the amount that remains behind is so insignificant that the bath again attacks the plates. A bath which is correctly iodised will allow of an addition of two or two-and-a-half cubic centimetres of water to every ten centimetres of bath before it becomes permanently turbid. In this way the degree to which the silver bath is iodised may easily be ascertained. Ten cubic centimetres of the silver bath are put into a glass vessel (a graduated measure is best), and distilled water is added drop by drop, agitating the liquid meanwhile. A point is soon reached when the precipitate formed does not again disappear on shaking, and then the addition of water is discontinued. Too strongly iodised baths will not bear the addition of so much as two centimetres, while one containing the iodide in small proportion will allow of the addition of two-and-a-half centimetres. The latter should be tested by the careful addition of a little iodide of potassium solution.

Finally, I should mention the important circumstance that iodide of silver is capable of being dissolved in much larger quantities in a cold bath than in a warm one; and

for this reason it is that at a high temperature the iodide is more apt to be precipitated from a dipping bath than in a low one—that is to say, more readily in summer than in winter. When the crystallizing out of the iodide takes place, then, as every photographer knows, there appear endless little pinholes in the collodion film.

I have now for more than ten years past pointed out this decrease of solubility of iodide of silver in a warm solution, but one still sees the fact ignored in so many manuals and handbooks of photography, that it does good to come back now and then to the oft-repeated maxim.

#### NOTE UPON THE FOCUSING OF SPECTRUM LINES IN SPECTROSCOPIC OR ASTRONOMICAL OBSERVATIONS.

BY DR. D. VAN MONCKHOVEN.\*

IF an examination is made of plate I., spectrum B, line G, with a microscope magnifying twenty diameters, and especially of the parts marked 2,625 and 2,800 of Kirchhoff, there will be seen a multitude of fine lines. To observe these lines in a spectroscope fitted with four prisms of flint glass, a comparatively powerful magnifier is necessary. From this it may be guessed how difficult is the focussing of such an image. If an error is made to the extent only of a thousandth part of the focal length of the lens, a great loss of sharpness ensues.

Now if a ground glass is used, produced with the finest emery powder, none of these fine lines are at all visible. The structure of the ground glass itself, viewed under a powerful magnifier, is very coarse; and if a line is drawn upon it with a hard blacklead pencil sharpened to a fine point, the line is thickened, on account of the grain on the glass.

The focussing of the fine lines of the spectrum, or of microscopic objects reflected upon a screen, or of celestial bodies, is therefore impossible with the aid of a ground-glass screen. It has been proposed to replace the same with a collodion plate exposed, developed, and fixed. In this way a transparent plate is secured, upon which is deposited a very fine precipitate of silver. By employing a magnifier of Ramsden's construction, it is possible to focus at one time the particles of reduced silver upon the film of collodion and the image. But, after all, this is very difficult in practice; for the silver deposit still presents too coarse a grain, and the finer objects are not seen at all.

Sometimes Ramsden's eyepiece is employed, adjusted in such a manner (upon a transparent, polished glass plate) that one side of the plate is in focus, and then the ground glass is replaced by a sheet of ordinary transparent glass. This method, however, simple enough in theory, gives rise to serious errors in practice.

The plan I adopt is the following:—To focus delicate objects, I move the ground glass to and fro in its proper plane; and to accomplish this the ground glass is placed in a frame adapted to the purpose. The grain disappears by the effect of the retention of the image upon the retina for a certain time, in the same way as the teeth of a cog-wheel disappear when the latter revolves rapidly.

The method is a very simple one, and is well adapted for projecting the lines of the ordinary spectrum. But when it is a question of very fine lines, such as the delicate one between the lines D and U' of the spectrum, then I make a revolving disk of glass covered with a film of very thin collodion, which is sensitized, exposed, and fixed. It is necessary that the glass be very flat. Then, on applying the microscope, it is possible to focus the finest lines of the spectrum, as also the most delicate astronomical objects, such as the companion of *Polaris*, &c.

Many who have experienced difficulties in focussing for very minute objects will find, I think, the method I have here indicated to be a very useful one.

\* Read before the Photographic Society of London.



## PHOTOGRAPHY FROM A SANITARY POINT OF VIEW.

BY DR. H. NAPIAS.\*

*Preliminary Remarks.*—The exercise of every trade and profession brings with it a series of ailments or peculiar maladies which are oftentimes dangerous, and sometimes mortal.

These *maladies of toil*, very numerous and very various, are due either to the nature of the work performed, to the character of the factory or office in which that work is undertaken, to the atmosphere that is breathed, and to the materials with which one has to labour; and if to these different causes we add those which are connected with one's mode of living, we shall have indicated the origin of nine-tenths of the maladies or infirmities that can afflict the human race.

The medical questions inherent to the sufficiency or insufficiency of one's means, as also to one's intelligence or ignorance, offer a wide and interesting field of study, and are, at the same time, of great importance from an economical and philosophic point of view, for it may be said that they exert the most direct influence and energy upon our health and upon the morality of our artisan classes. But these are questions relating to general hygiene, intimately connected with political and social economy, and which we shall not here discuss, as they lead us very much from the path we have proposed to follow.

Maladies, whatever may be their causes, have been provided by medical science with prescriptions and remedies, preventive, palliative, and curative. The aim of medicine, in fact, ought to be, according to the nature of the circumstances, to prevent the malady if possible, to palliate its gravity, or to effect a radical cure when it has neither been foreseen nor prevented.

We call that portion of the medical art hygiene which relates more particularly to preventing the development of maladies by means of a certain number of precautions indicated by experience and common sense, and by the teachings of science. Hygiene is, in a word, the art of preserving one's health.

Professional hygiene is the special hygiene of each profession; that is, the sum of means capable of destroying or lessening the bad influences inherent to such or such a form of labour.

From what we have said, the importance of hygiene may be easily understood, and it would be a good thing, indeed, if everybody understood its elements. It seems to us that such knowledge should form part of the preliminary instruction in schools, the study of general hygiene being afterwards supplemented, when a profession or trade has been chosen, by an acquirement of the elements of professional hygiene.

The profession of photography, like all others, has its inconveniences and dangers from a sanitary point of view. No matter whether those who occupy themselves with the art are, in general, better instructed than those who devote themselves to other labours, or whether the salary is ordinarily enough, and sufficiently remunerative, to guard them from the lower morbid influences, such as result from physical and moral misery—two things signifying indigence and ignorance—they are still exposed to a certain number of baneful influences, due to the circumstance that they have for the greater part of the day to live in an atmosphere charged with ethereal vapours, to manipulate noxious chemical substances, and to submit to other matters of a prejudicial character, which we shall allude to hereafter.

We propose, in this little work, to pass in review these different influences, to demonstrate their serious nature, and to indicate the best means to lessen their grave effects upon the system.

*Of the atmosphere of photographic studios.*—The presence in the laboratories and photographic work-rooms of a large number of chemical products, some of which are very volatile, have the effect of vitiating the atmosphere and charging it with foreign vapours. Among these substances alcohol and ether stand in the first rank, and particularly merit our attention. Alcohol and ether, so constantly employed in photography, and so volatile in their nature, charge the air with their vapours; and the higher the temperature is, the greater is the quantity of vapour disengaged, a reason why the evil is aggravated in summer, and by the glazing of the studios.

The first effect of this mixture of alcohol and ether upon the air is to communicate to it a characteristic and penetrating odour, which exerts a different effect upon different people, but to which they are not long in completely habituating themselves. At the same time, some photographers, after practising their calling for some time, feel, they tell me, when they have worked long in the laboratory, a giddiness, and sometimes even a disposition to vomit, and, more often still, a bad headache. With others there is nothing of this kind, but the appetite diminishes, and sleep becomes bad and irregular, or sometimes is wanting altogether. With others, again, the continual inhalation of the ether vapour occasions cerebral excitement, which is not altogether unconnected with inebriation.

These few words suffice to show in what different ways an atmosphere charged with ether and alcohol vapours may influence the health of photographers. Sometimes this influence is quite imperceptible upon the patient himself, or, at any rate, he does not attribute to it the cause of the maladies which, in certain cases, may result from it, such as bronchitis, inflammation of the lungs, and congestion of the brain.

Whatever accidents may arise from living continually in a certain atmosphere, we may state that in order to avoid—or, in any case, not to augment—the bad effects, the first hygienic condition to fulfil is to partake but very moderately of alcoholic liquors. If the abuse of alcohol upon man (whatever may be his profession) exerts the most baneful of influences; if it is the origin of so many diseases, and also, we may say, of so many vices and crimes; if it is the main reason for most of the follies that are committed, since more than a third of the insane owe to it their loss of reason; if, because of all this, it behoves every one to guard himself above all against the terrible habit of drunkenness, it is of much graver consequence to do so in professions like that of the photographer, who is exposed daily to the inhalation of ethereal vapours, against which he must fight and defend himself.

Alcohol absorbed into the system is supplemented in its action by the ether breathed through the nostrils, and thus the injurious effects of the former are exaggerated or are germinated in those who would otherwise have escaped them.

A sojourn at the café or tavern on quitting the studio may be replaced with advantage by a long walk in the open air; and in warm weather the best drink that we can recommend photographers to refresh themselves with is lemonade, seltzer water, or other acidulated liquors, which tend to annihilate the effects of the ether fumes. A good thing in the morning before proceeding to work, or at night on coming home, is a glass of claret and quinquina, made simply with *vin ordinaire* and yellow quinquina, which serves, on account of the tannin and quinine it contains, to counterbalance the effects of the ether, and, at the same time, excites the appetite and favours digestion. By preparing it oneself the cost is not very great, certainly much less than the Vermont sold at cafés and cabarets, a slow poison which people take day by day under the name of absinthe. If acid drinks do not suffice to get rid of the headaches with which photographers are so often troubled, a few drops of ammonia or vinegar in a glass of sugar water will very often succeed.



Finally, we may add that this course of sanitary regime will be materially aided by suitable ventilation of the studios, and by continual renewal of the atmosphere that is breathed.

(To be continued.)

#### HAVING A PHOTOGRAPH TAKEN.

HAVING a photograph taken is one of the great events of a man's life. The chief desire is to look the very best, and on the success of the picture hinges, in many cases, the most important epoch in life. To work up a proper appearance time enough is used, which, if devoted to catching fleas for their phosphorus, would cancel the entire national debt, and establish a daily paper. When you have completed your toilet, you go to the gallery and force yourself into a nonchalance of expression that is too absurd for anything. Then you take the chair, spread your legs gracefully, appropriate a calm and indifferent look, and commence to perspire. An attenuated man, with a pale face, long hair, and a soiled nose, now comes out of a cavern and adjusts the camera. Then he goes back of you, and tells you to sit back as far as you can in the chair, and that it has been a remarkably backward spring. After getting you back till your spine interferes with the chair itself, he shoves your head into a pair of ice-tongs, and dashes at the camera again. Here, with a piece of discoloured velvet over his head, he bombards you in this manner:—"Your chin out a little, please." The chin is protruded. "That's nicely; now a little more." The chin advances again, and the pomade commences to melt and start for freedom. Then he comes back to you and slaps one of your hands on your leg in such a position as to give you the appearance of trying to lift it overhead. The other is turned under itself, and has become so sweaty that you begin to fear it will stick there permanently. A new stream of pomade finds its way out and starts downward. Then he shakes your head in the tongs till it settles right, and says it looks like rain, and puts your chin out again, and punches out your chest, and says he doesn't know what the poor are to do next winter unless there is a radical change in affairs; and then takes the top of your head in one hand, and your chin in the other, and gives your neck a wrench that would earn any other man a prominent position in a new hospital. Then he runs his hand through your hair and scratches your scalp, and steps back to the camera and the injured velvet for another look. By this time new sweat and pomade have started out. The whites of your eyes show unpleasantly, and your whole body feels as if it had been visited by an enormous cramp, and another and much bigger one was momentarily expected. Then he points at something for you to look at, and tells you to look cheerful and composed, and snatches away the velvet and pulls out his watch. When he gets tired, and you feel as if there was but very little left in this world to live for, he restores the velvet, says it is an unfavourable day for a picture, but he hopes for the best, and immediately disappears in his den. Then you get up and stretch yourself, slap on your hat, and immediately sneak home, feeling mean, humbled altogether, and too wretched for description. The first friend who sees the picture says he can see enough resemblance to make certain that it is you, but you have tried to look too formal to be natural and graceful.—*Danbury News.*

#### Correspondence.

##### THE COLLODIO-CHLORIDE PROCESS.

SIR,—There is prevalent at this season of the year, in gardens, fields, and by hedgesides, an offensive pest known to entomologists as the *Tettigonia Spumaria*, and to the unscientific public as the cuckoo-spit. It generally attaches itself to the leaves and branches of the most choice and fragrant plants, battening upon their vital

juices, but enveloping itself in a mass of frothy spume, which hides the mischievous insect until the slimy ooze is removed in order to crush the offensive creature. I was reminded of this insect by a letter in your *Liverpool contemporary*, on the collodio-chloride process, chiefly consisting of frothy invective, innuendo, and reiteration of oft-refuted misstatement. As regards the slanders the writer voids upon yourself, I shall not so far presume as to suppose that they need refutation. But there are two points in relation to my own letter in your pages upon which I shall ask permission to say a word. He does me the honour to identify my pen with yours, or that of one of your "touters." I think it is Tennyson who says that slanderers generally impute to others the vices to which they are themselves the most prone; and we might thus readily understand, therefore, the origin of the letter in question, even if the well-known vulgarity of style had not identified the writer beneath a pretended real signature. But he fails, with all his mendacity, to answer the challenge in my letter, in which I in effect call upon any one to produce evidence that he ever saw, or heard of the existence of, a collodio-chloride print until you published the process in your pages in 1864. Until this is done railing can serve no purpose but to degrade the railer.—Yours truly, FAIRPLAY.

#### A FICTITIOUS NAME.

SIR,—Without wishing to enter into a quarrel which, on one side at least, is too contemptible for notice, will you allow me, in the interests of a noble profession, the name of which is unscrupulously dragged into the dirt, to make a statement and protest. In a photographic journal published last week I find a vulgarly abusive letter signed "Henry Edward Thompson, M.D." Regret that a medical man should descend so low was my first feeling; doubt of the genuineness of the signature the second, which was strengthened by finding that this ostentatiously full signature was not accompanied by an address. A very easy reference showed me that no such person exists. To a very ignorant person the possibility of giving weight to a fictitious name by the addition of "M.D." might appear a very safe device. As it happens, there is no trick more easy to detect. The Government has made it imperative that every "M.D.," and, indeed, every qualified practitioner, should be duly registered, and there is no "Henry Edward Thompson" whatever in the "Medical Register," either in England, Ireland, or Scotland, nor amongst the medical officers of the army and navy. As to the skit on yourself, I should suppose you would consider it beneath notice; but I protest against the indignity to the medical profession involved in the use of the titular "M.D." to give fictitious weight to an attack which would have been vulgar and scurrilous if true, and which, being untrue, I will refrain from characterizing.—Your obedient servant,

G. V.

[We have received another letter calling our attention to the fact that there is no such name as that attached to the letter in question in the "Medical Register." Our correspondent is right in supposing that we should regard the slanderous drivel as beneath contempt, nor shall we comment on the decency of the attempt to give it a factitious appearance of weight.—Ed.]

#### ABUSIVE JOURNALISM.

DEAR SIR,—The status of photography in the social world is becoming worse and worse, and our highest and cleverest professors bewail their condition. This is bad enough; but, added to this state of things, we seem to be drifting into a chronic condition of antagonism amongst ourselves, which results in giving license to the worst passions of the human mind. Why this should be so appears a most difficult problem to solve. Can it be that the practice of photography so re-acts upon the whole system that all the worst moral qualities of the heart become developed to an unusual extent, and a tendency to attacks of irritability the result, which seem to dry up all the kind and courteous capabilities of our nature?

In the early days of photography such used not to be the case, so that it would seem to follow that after a few years devoted to the close practice of the art, these dangerous symptoms set in. If so, let our young aspirants to fame and position pause, and seriously think about what can be done to act as a check upon so grievous and melaucholy a condition of matters, which now seems to pervade so many of our advanced members.

I am led to these thoughts not only by recent events, but more especially by the publication, in a contemporary, of various letters and observations, all showing such an unkind and, I might almost say, savage condition of mind, that one cannot but feel



pained and subdued, feeling that if such is to be the result when differences of opinion upon any subject arise, how little of that high moral principle of wishing to "do unto others as we would wish others to do unto us" is extant amongst photographers.

There is, however, just one ray of comfort which we have, and that is, that despite numberless provocations, and all that is calculated to rouse up angry feelings, the PHOTOGRAPHIC NEWS has shown a determination to refrain from the slightest exhibition of that painful and fatal resource of vulgar, ungenerous minds—"personal abuse." We photographers, if ever any social position is to be conceded us, must endeavour to conform to all those laws and customs which the refined and polished circles of society intuitively respect and follow.

Feeling personally very strongly the loss of status incurred by photographers, and believing that the many are suffering for the shortcomings of the few, I call upon all who value right conduct and the cultivation of the amenities of good society to show, in some way or another, that they do not indorse such ill-judged and extravagant language, which disgraces our literature, and is difficult to combat with, for it is like a chimney sweep in a crowd—the respectable stand on one side, fearing contact and contamination.—Yours, &c.,  
INDIGNANT.

#### NEW LAWS OF THE PHOTOGRAPHIC SOCIETY.

DEAR SIR,—Please insert the following in Friday's NEWS, and oblige your truly,  
GEO. HOOPER.

##### SPECIAL NOTICE.

THE New Laws will be in the hands of members not later than Monday next, and a special general meeting for passing same will be held at 9, Conduit Street, Regent Street, W., at 8 p.m., on Tuesday, 30th June.  
GEO. HOOPER, Acting Secretary.

Winwood House, 68, Canonbury Park South, June 17.

#### ALBUMEN AND BEER PROCESS.

SIR,—In your columns of last week Mr. W. H. Davies fully establishes his claim to being the first to use albumen and beer as a preservative. I need scarcely say that I was unaware of the fact, as if I had been I should most certainly have mentioned it in my paper to the YEAR-BOOK. I must, however, draw attention to the fact that the mode of applying the preservative in the two cases is somewhat different, and, naturally, I am inclined to think that my own method is the better. I had tried Mr. Davies' plan originally, and abandoned it for that I now adopt. There are two essential differences between the two: I advocate rendering the albumen and beer very strongly *alkaline*, and also washing off any excess, and finally giving a varnish to the film of beer and pyrogallic; and Mr. Davies adds the gallic (or pyrogallic) acid to the albumen and beer, as also nitrate of silver, and allows the albumen to dry without washing afterwards. I lay great stress on rendering the film *alkaline*: it is an important means for securing rapidity. The exposure necessary for a wet plate is sufficient if so prepared. One advantage of washing off the albumen is, that Col. Wortley's strong alkaline developer can be used (minus the bromide), whereas with a thicker film of albumen it is mostly held that this developer is inadmissible.

There are certain other advantages in the final wash of beer and pyrogallic acid, which it is not necessary to detail. I think the difference between the two modes of working is about as large as between the Fothergill and Taupenot processes. Davies' process I am sure is excellent in every way, but by me has been found slow. I would ask him to give the modification a fair trial, using the strong alkaline development, with but short exposure. Perhaps he will find it worth continuing. Call either process by what name you will, they will both yield a high class of negatives.

Any one using alkaline albumen should try dissolving "dried albumen" in water rendered slightly alkaline by ammonia. Place twenty-five grains in a dish and boil them in one ounce of water. The liquid will be free from "strings," and perfectly limpid. This is about equivalent to the white of one egg. Dried albumen costs about eight shillings per pound, and can be obtained from a well-known manufacturing chemist. Blood albumen is nearly as good as ov-albumen.—Yours faithfully,

W. DE W. ABNEY, Capt. R.E.

### Proceedings of Societies.

#### SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE last meeting of the present session of the South London Society was held in the rooms of the Society of Arts on the

evening of Thursday, June 11th, the Rev. F. F. STATHAM in the chair. The minutes of a previous meeting were read and confirmed.

MR. HOWARD and MR. FOXLEE stated their experiences with aurine for producing non-actinic glass, the former gentleman having used it in varnish, whilst the latter used collodion as the vehicle.

MR. W. T. WILKINSON exhibited an ingenious plate-holder, similar to one he described in our pages, a modification consisting in placing the handle at the corner. After votes of thanks,

MR. WHARTON SIMPSON, at the request of the president, gave a brief account of the theory and practice of the powder process as practised for the reproduction of negatives at one operation after which

MR. WRATTEN, from the establishment of Mr. Solomon, gave a successful practical demonstration of the process, reproducing a portrait negative, and a negative of an engraving. He explained various points of detail as he proceeded. He used magnesium light, giving an exposure of about two and a quarter minutes, and using three feet of wire. This, he explained, would be about equivalent to five minutes of diffused daylight. He had produced a good enlargement on the sensitive surface with an exposure of fifteen minutes. The formula for the sensitive preparation which he employed differed somewhat from the other formulae which he had seen published. It stood as follows:—

Dextrine	...	...	...	...	...	1 ounce
Grape sugar	...	...	...	...	...	"
Bichromate of ammonia	...	...	...	...	...	"
Water	...	...	...	...	...	1 pint

Some conversation on the relative advantages of bichromate of ammonia and bichromate of potash, in the course of which MR. B. J. EDWARDS said that he found that the addition of a little ammonia to the bichromate of potash solution secured all the advantages of the ammonia salt at a cheap rate; and Mr. Simpson pointed out that this addition produced a double neutral salt, analogous in solubility and sensitiveness to the simple ammonia salt.

MR. HOWARD showed some negatives which he had produced by this method, using very simple materials and appliances. He had followed generally the plan described by Mr. Woodbury in the journals, but, as he had no glucose at hand, he used ordinary white sugar. He took the lead of an ordinary lead pencil, and pounded it in a mortar for his graphite. Altogether he found the process easy and successful.

In answer to questions, MR. WRATTEN said that with the aid of an assistant he could produce fifteen or twenty completed duplicates of negatives. He liked the graphite perfectly dry, and gave it a good roasting before use. He liked to work in a dry warm room.

MR. B. J. EDWARDS had found it useful for strengthening negatives, or for obtaining a duplicate negative at the back of a thin negative giving the softened mezzotint effect, which had been described as produced by printing from two negatives. He exhibited two prints, one from an untreated negative, and the other from the same negative after a duplicate negative had been produced at the back, the latter having a pleasing softness, which was regarded as very effective.

MR. TULLY showed an ingenious plate-vice for holding the glass during cleaning, simplicity in securing and releasing the plate being obtained by turning a handle working on a pivot fixed out of the centre.

MR. W. T. WILKINSON said a similar holder had been described and figured in the YEAR BOOK OF PHOTOGRAPHY a few years ago (1869).

After some further conversation, and a vote of thanks to Mr. Wratten, the President gave his annual invitation to members to spend an evening at his house on the last Saturday in July. The proceedings then terminated.

### Talk in the Studio.

PARSON'S SEMI-OPAQUE VARNISH.—We have examined and tried a bottle of Parson's semi-opaque varnish, and find it admirable. When applied either upon bare glass, the collodion film, or upon the surface of a varnished negative, it gives a matt translucent surface, like that of the finest ground glass, peculiarly well fitted for backing stereoscopic and other transparencies. It presents a very fine tooth to a lead pencil, permitting the most delicate retouching to be effected without coarseness or granularity. The surface is very even and very hard, and in every way satisfactory.



**ROBINSON'S SPOTTING-OUT COLOUR.**—We have received a bottle of Robinson's "spotting-out" colour, which every photographer will find a great boon, and having used it once, will scarcely be willing afterwards to forego its use. It possesses an unctuous quality which makes it easy and pleasant to work. It takes easily to the varnished surface, does not spread, permits very fine touches of either a semi-transparent or perfectly opaque character, and dries rapidly with precisely the same effect as when applied. Its exact constitution we do not know, but it possesses something of the quality of reduced silver, or the deposit which forms a negative, ground up with an essential oil. Whatever its constitution, it is a capital preparation for its purpose.

**TEAR-SPOTS ON SILVERED ALBUMEN PAPER.**—Mr. L. D. Judkins writes to the *Photographic Times* as follows:—"The first symptom of tear-spots on the drying of silvered albumen paper is the oily appearance on the silvered surface while drying, the free surplus silver running down the sheet in small rivulets, then breaking up into small globe-like bodies; and if left to dry, form what it is so often called tear-spots, which are a source of great annoyance to many photographers. If at any time your paper dries as above stated, pin the paper to a board at each corner with copper tacks, and whilst moist take a tuft of cotton and destroy the small bodies of silver as they form on the surface of the paper by brushing them away. But if the paper has become nearly surface dry, wet the tuft of cotton with the drip on the bottom of the sheet, and moisten the surface of the affected part again; the paper now assumes a smooth surface, and dries free from spots."

**BLEACHING IVORY, BONE, ETC., BY LIGHT.**—M. Clöez finds that exposure to the light of the sun for three or four days in oil of turpentine is a most efficacious process for bleaching bone, ivory, and some other articles. Bone and ivory thus treated become of a dazzling whiteness. The objects to be bleached must be suspended so as not to quite touch the bottom of the vessel containing them, as this is covered by a very thin acid layer produced during the operation. Other similar essential oils produce the same effect.

## To Correspondents.

**THE COLLODIO-CHLORIDE PROCESS.**—We must apologise to several correspondents, who have sent communications for publication on this subject, for the non-insertion of their letters. As there is really no point requires elucidating, and, as Mr. Bovey remarked in our last, the process is freely given to the public, nothing can be gained by further discussion. We are perfectly satisfied with the recognition of the public of our authorship of the process, which has, indeed, never been disputed except by the petty jealousy of one without the rags of a reputation for originating anything. **AN OLD AMATEUR** writes to point out the fact that there is no such name as Henry Edward Thompson, M.D., in the "Medical Register," and asks, "What credence, then, can be given to any statement, on any subject, by a person who, writing anonymously, endeavours to obtain the authority of a personal identity by fabricating a name, and adding to it initials belonging to an educated profession?" Another correspondent, signing "R. A.," who heads his letter with the caption "Mad Dog," after some good remarks on the general subject of the Eatanwill style of journalistic writing, says:—"I purposely leave out of the present question all consideration of the collodio-chloride process: as none of the gentlemen who have written upon the subject claim the discovery for themselves, and those upon whom they would confer the honour have disclaimed, I think I may very well do so. It seems to me, from the style of several letters that have lately appeared, that a 'very pretty quarrel' has just commenced. The animus in more than one of these articles is manifest enough, but all 'pale their ineffectual fires' before one that appeared in last week's *Journal*, from the pen of a correspondent who adds 'M.D.' to his name. What is the meaning of this M.D.? Under ordinary circumstances, I should conclude the initial letters stood for Doctor of Medicine. Now I have the utmost admiration for the healing art."

"A leach well skilled our wounds to heal  
Is more than armies to the common weal,"

says (Pope's) Homer. Yet surely a professor of this noble art would never descend to maim and mangle a reputation in the style of this M.D.! It cannot be; and the snap, snarl, and bite of the whole course suggest, as much more appropriate, the heading of the present article. Certainly this correspondent does not do things by halves.

"Frontless and satire-proof he scours the streets,  
And runs an Indian muck at all he meets."

M.D. has made a discovery: he understands it is 'now' the fashion of the town—and country too, he might have said—to

quote Shakespeare. He is right for once, at any rate. It is a fact, although scarcely of the newest. The said fashion commenced in the reign of Queen Elizabeth, and has extended itself so far that at last it has even come to the knowledge of M.D. He has also, it would appear, made another discovery, in ascribing the letter of your correspondent 'Fairplay' to your editorial pen. Let he should make yet another, and hold you responsible for the present communication, I leave you at liberty to furnish my name to any one who may feel curious upon the subject, except to our discoverer himself. I am neither bashful nor timid, but, considering the season of the year, and the nature of his complaint, I decidedly object to a *tele-a-tele* with 'M.D.'—Yours truly, R. A."

"T. P." and others will see that we cannot, with propriety, devote further space to the subject.

**A. B.**—Excess of intensity and lack of half-tone may proceed from many causes; but in the case you describe it probably arises from the collodion gradually becoming less sensitive and more intense from age. You may probably find a remedy in adding a little new collodion to the old; or you may find that giving a longer exposure will aid you; or the use of a developer containing thirty or forty grains of protosulphate of iron and fifteen minims of acetic acid to each ounce will tend to the production of more half-tone. The addition of about half a grain of bromide of cadmium to each ounce, and keeping the plate in the bath a little longer, will often prove a remedy.

**A SUBSCRIBER.**—We regret that we cannot point out any specific mode of proceeding. Occasionally there are advertisements in our columns seeking for such aid as you describe for India and the colonies. Failing the opportunity of waiting for such announcements, you might advertise, as the *News* circulates in India and the colonies. These are the only modes of which we know, except chance recommendation.

**AMATEUR.**—Can you find space for an additional pane of orange glass? If so, that would best meet the case. 2. Stains may proceed from many causes, but most generally dirty glasses, and long exposure and prolonged development, would much increase the risk. Have you tried giving the glass a preliminary coating of dilute albumen? 3. The statement that your negatives show a tendency to be granular is scarcely sufficiently specific to enable us to advise you. Do you mean that the surface looks granular or sandy after development, or that the texture of the finished negative is granular? If the former, it is probably because the bath is becoming supersaturated with iodide of silver, which must be removed by one of the methods we have often described, several of which you will find in detail in our last *Year-Book*. If the finished negative looks granular in texture, it may arise from slight under-exposure, and forcing in the development.

**W. R.**—The patent of the carbon process granted to Mr. Window is, we have no reason to doubt, valid. It is analogous to the powder enamel process and the process used by Herr Obernetter in reproducing negatives. Mr. Window's patent is for the application of this process to the production of prints on paper. The object of the alcohol is to aid in coagulating the film of albumen.

**A CONSTANT READER.**—The mottling is probably due to fuming the paper whilst slightly damp. We have found it occur in a much worse degree than in your example from such a cause.

**NINA.**—The simplest and most satisfactory method of neutralizing chloride of gold solution is by the use of pure carbonate of lime, or "prepared chalk," as it is often named. The acetate bath gives fine purple tones if the negatives are good; it should be made a day or two before use, and need not be neutralized. It will tone rapidly if made moderately strong—say one grain of chloride of gold to four ounces of water. The silver bath is best used neutral.

**A. L.**—The first step in procuring a patent consists in depositing at the Patent Office in Southampton Buildings a provisional specification describing the invention in general terms. The cost of the Government stamp required for this document is £5. This will protect the invention for six months. If you intend to complete the patent, you must give notice within four months of lodging your provisional specification, and proceed to lodge your complete specification. The total necessary expenses of securing protection for three years are about £20, and the total further costs in securing protection for the full term of fourteen years, about £150 more. The best plan is to employ a patent agent, who will take the necessary steps and charge moderate fees for the duty.

**HAMPSHIRE.**—We are not familiar with the lens you mention. The best mode of ascertaining its capabilities will be by trial. You will find that the greater the distance between the lenses the smaller will be the field of illumination; but it will be at the same time flatter.

Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED

- MR. A. BEATTIE, Preston,  
Photograph of John Holker, Esq.  
MR. J. CLAYTON, Nottingham,  
Three Photographs of Ancient Earthenware.  
MR. W. STREET, Waterford,  
Two Photographs of Kilkispeir Cross.



## The Photographic News, June 26, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO. THE MOST POPULAR PHOTOGRAPHIC PORTRAITS—THE BEST WAY TO VIEW A PHOTOGRAPH.

*The Most Popular Photographic Portraits.*—A practice prevails with some illustrated journals, which has of late been very much over-done, of presenting their readers weekly, or fortnightly, with a cartoon, or picture, of some great personage. *Vanity Fair* was one of the first of those which established quite a reputation for these kind of portraits, and so popular were the productions that, naturally enough, all sorts of imitations speedily arose, and now we have periodically an abundant crop of pictures, of all sorts, of great and little men. We have been treated ad nauseam to this literary dish, and are tired of looking at the Joneses and Jenkines that are put before our eyes because the supply of great men has fallen short: for it is only occasionally, now-a-days, that a Sir Garnet Wolseley or Albert Grant starts up. As we recently pointed out, the London *Figaro* has recently made a pleasant innovation in the matter, and taken to presenting its readers with a genuine photograph of some personage of public interest. The enterprise is a bold one, and, as far as we can judge, it seems to have been successful, although the presentation of a *carte de visite* photograph with a twopenny paper would scarcely be a paying speculation, so far as the proprietors are concerned. There is, however, yet one improvement we should like to see. The *Figaro* is of course intended to be always light and amusing, and for that reason gives its readers portraits of those people who are connected with the opera, the drama, &c.; but why not take a wider range, and give photographs of those universally loved and esteemed, whose features are rapidly fading from our memory, because they lived before photography had greatly developed itself, and their pictures are therefore comparatively rare? There is Thackeray, for instance, of whom several negatives are still in existence; but few private albums possess a picture of our admirable novelist, and a true and permanent photograph of him would be prized beyond measure in every home. And what holds good of Thackeray is true of other authors of lesser note, whether English or foreign, who have died within the last ten or twenty years. The late Prince Consort is another instance, for, although his portrait may be seen tolerably frequently, still the pictures in most photographic albums are discoloured and yellow by this time. There are probably a few Daguerreotype images of the Duke of Wellington still extant, which might be copied, and issued in this manner; and very good portraits no doubt exist of Lord Clyde, Sir John Burgoyne, and other generals of note. Then there are two portraits which, when photography plays a part, ought not to be omitted—those of Fox Talbot and Daguerre—for pictures of these two, at any rate, of the illustrious trio, are to be had; of Nicéphore Niepce, unfortunately, we have no portrait taken from life. Numerous other notabilities, now gone from us, have been photographed, whose portraits we should treasure far before those of the actors and authors of to-day, and it is sincerely to be hoped, therefore, that before the fragile glass upon which many such rare and precious pictures at present exist becomes damaged and broken, that steps will be taken to produce prints either of an unalterable nature, or images upon enamel, which could be preserved without injury for those who come after us.

*The Best Way to View a Photograph.*—Few people really appreciate the full enjoyment to be obtained from viewing enlarged photographs projected upon a screen in the same way as magic lantern slides are shown. A few days ago we were fortunate enough to attend a soirée where a most pleasant hour was spent in looking at bright representations of this kind, a No. 1b lens of Dallmeyer being the lens employed in one of the sciopicon instruments, the

petroleum flame of which, we may mention, burnt brilliantly the whole time without the slightest mishap. The first display we ever saw of this kind was at Paris, where the magnificent transparencies of Leon and Levy were projected upon a screen at one of the photographic exhibitions in that city. The instantaneous pictures were marvellously rendered in this way, one of the slides, which our readers may have seen, of a large sailing vessel being tugged into harbour by a little steamer, being most illusionary. Photographs such as these, we make bold to say, are never seen to such advantage as when enlarged and illuminated like this, for only in this way can every detail be seen; and, if possible, it is well to employ the same lens for enlarging as that originally used for securing the picture, for in this way you get rid of a great deal of the distortion which is sometimes very painfully obvious when any architectural lines are in the foreground. The pictures we saw the other night in a drawing-room were of spots from every point of the globe, and not the least interesting were some portraits of Eastern potentates on their thrones, in their State robes, which were rendered life size. It is something to be able to command the presence of this or that royal personage in one's drawing room, to be stared at and amuse the guests, who freely comment upon his awkward appearance under the trying circumstances. The easiest way to produce these transparencies is by carbon printing, because one has simply to expose a bit of carbon tissue, and develop it upon a glass plate, and the thing is done; but a dry sensitive plate will answer the purpose almost as well, only in this case great care must be taken not to print too deeply, for an image made up of silver particles will not allow the light to pass through anything like so readily as a pigment picture, although to the eye they may appear equally dense.

### GELATINE AS A VEHICLE FOR SILVER SALTS IN THE PRODUCTION OF NEGATIVES.

BY JOSHUA KING, M.A.\*

HAVING now described my method of working, which is manifestly open to the objection that the coating and drying of the plates is a difficult matter when compared with the analogous operations in the collodion processes, I must endeavour to show that there are advantages in the plan which more than outweigh these drawbacks. And first I would beg to impress upon you that you are not asked to decide that gelatine is entitled to supersede collodion; all that I wish to establish is that, under certain circumstances, gelatine may be used with advantage as a substitute.

The wet process will always hold its own in the studio; and there seems to be a strong reaction in its favour for field work among the most distinguished landscape photographers of the day; still there is a charm about dry-plate work which will assert its influence; and though commercial dry plates will continue to find customers, it is fair to infer that there will always be found a band of enthusiasts to whom the labour of preparing their own plates is one of love, or whose pursuits carry them into regions where they are thrown upon their own resources for the materials with which to prosecute their art. To these, I think, such a process as I have described may prove acceptable. To them it will matter little whether pyroxyline be intense or not, whether collodion be powdery or skinny, whether washing water be pure or foul; a teakettle, a tumbler, and a damp towel will distil as much water as they require in a few minutes, and a packet of gelatine will be all that they will have to carry, in the place of that dangerous travelling companion the ether bottle.

Not only will the impedimenta of the gelatine-worker be lighter and simpler than that of his fellow-labourer who prefers collodion, but it is rational to suppose that the quality of his work will be more uniform, every plate



which he prepares will be exactly like every other one of the same batch; whereas a small difference in the time in which the collodion plate has been in the washing water, or the organifier will often alter its character materially, independently of the fact that the rapid evaporation which is inevitable in hot climates forbids the hope that the last plate shall be as the first. I wish I were able to lay before you a series of plates which would worthily illustrate the process, and show that in point of technical excellence gelatine negatives are not to be despised, but I have not had the time or opportunity for negative-making since the weather became propitious. Of those which will be laid before you, one only, taken early in January last, is worthy of notice; and it is not put forward as a specimen picture or remarkable for well-timed exposure and happy development. It will, however, serve to show the characteristics of gelatine work, which seem to be softness and delicacy of detail. I would also draw your attention to a batch of failures, to each of which I have appended a note suggesting a cause and a remedy. If any members of the society who have experimented with gelatine can verify my observations, or indicate their error where I have come to wrong conclusions, I think the work of those who come after will be simplified.

The only novelty that I have imported into the process is the use of dialysis, to which I was driven in my endeavours to get rid of the nitrates which are produced by double decomposition; and I am prepared to be met by the objection that I am not obliged to have recourse to double decomposition in the gelatine solution at all. Mr. Sutton, who advocates what I may, perhaps, be allowed to call the indirect method of sensitizing an emulsion, defends his plan on the ground that he gets rid of "double decomposition within the emulsion itself, with all the attendant evils of that method."

I do not rightly understand in what the perniciousness of double decomposition consists. In the wet process the film is charged with iodide or bromide of silver by direct double decomposition in the bath; and no evil results accrue, so far as I can see. Why, then, should the same agency be condemned in an emulsion process when all the obnoxious results can be removed afterwards with little care and no trouble?

I will assume that an emulsion can be made by precipitating bromide of silver from aqueous solutions, washing it and mixing it with gelatine, equal to that which is obtained by dialysis—what advantage has the former over the latter? The preparation of the bromide of silver requires time and care. It is very liable to be attended with considerable waste, and in the end the success of the operation will depend greatly upon the energy with which the pestle and mortar have been worked; whereas by promoting double decomposition in the gelatine, as I advise, no difficulty whatever is found in procuring an emulsion of unimpeachable quality as regards absence of granulation, and neither skill nor strength are required for the simple operation which removes the obnoxious nitrates.

I must admit that my method may take a little longer, but as it does not demand fixed attention while the dialysis is in use, there need be no waste of time.

I have not tested my emulsion for free nitrate, or free bromide, but I imagine that when it is dialysed it is to all practical purposes neutral, as diffusion has abstracted all but a trace of the free salts.

The proportions of potassium, bromide and silver nitrate which I employ are, as you will observe, nearly in the ratio of their chemical equivalents. One emulsion which I made with an equivalent weight of ammonium bromide seemed to be much less sensitive than that with potassium; but whether the difference was real or only apparent, owing to unfavourable condition of light, I cannot say, as I did not repeat the experiment.

I have reason to believe that the plates will keep well; but special care must be bestowed on plate-cleaning if

they are to be kept. For a proof of this I would call your attention to a stain on a plate exposed four months after preparation, where the mark of a pneumatic plate-holder, used in India two years before, is plainly visible, though the plate had been used and cleaned at least a dozen times in the interim. The metallic marblings visible on the same plate I am disposed to refer to an abnormal reduction of the silver salt in the film, caused by a leakage of gas into the room where the plate box, which was not airtight, was kept. The plates are fairly free from blurring; and I use no backing with them, as I think that they are not liable to that form of blurring which is caused by reflection from the back of the plate.

I have said nothing about the development of the plates, as I think each worker has a method which answers well in his own hands, and that he will find no difficulty in adapting it to gelatine films. The only stumbling-block is the blistering to which I have alluded earlier; and the cause I believe to be, generally, moisture in the film. For the more subtle variety which I have indicated, I cannot at present prescribe; but I trust that its origin will be discovered, and its occurrence obviated, if the experience of successful gelatine-workers is placed at your service.

As regards the keeping qualities of the emulsion, I can say but little: I have kept it a month in cold weather without any change taking place, and the quality of the plates prepared respectively at times separated by that interval has been identical.

I do not think there is any other point in my formula which requires explanation, unless it be the addition of alcohol to the solution of silver nitrate. I adopted this addition upon the recommendation of a gentleman signing himself "Ostendo non Ostento," who wrote on the process in the *British Journal* last autumn, and I find that I can get a fine emulsion, free from dots, more easily when I use it than when I substitute water. I cannot trust myself to explain what I regard as a fact, so as to satisfy those whose knowledge of the mechanical condition of the alcoholic solution may convict me of empiricism; but if precipitation is to some extent retarded by the different density of the two menstrua, I venture to submit that I am justified in believing that the precipitate is more finely divided.

In conclusion, I need hardly remind you that in dealing with subjects in which physical science is the arbiter, I am venturing into a region which the feet of the uninitiated can hardly tread without stumbling; I must therefore beg you to excuse the crudity of my opinions on the ground of inexperience, and to pardon the length of these remarks in consideration for the garrulity of an enthusiast.

#### UPON THE SENSITIVENESS OF THE SURFACE OF TINTED BROMIDE OF SILVER TO THE DIFFERENT COLOURS OF THE SPECTRUM.

BY DR. D. VON MONCKHOVEN.\*

Presented by J. H. DALLMEYER, F.R.A.S.

IN the month of December last I became acquainted with the researches of Dr. Vogel upon the sensitiveness of dry plates to the red and yellow rays of the spectrum. According to Dr. Vogel, a plate prepared with bromide of silver is sensitive only to the rays of the spectrum more refrangible than the green; whilst, if the bromide film is coloured yellow or red, it becomes sensitive to the yellow and red portions of the spectrum at the same time.

Dr. Vogel goes so far as to lay this down as a general law. He affirms that by adding to the bromide of silver any colour which absorbs a certain part of the spectrum, the maximum of sensitiveness in the bromide will be found in this portion.

For some years past I have occupied myself with spectrum observations, with the object of determining by photography the coincidences of the ultra-violet rays with the brilliant rays of metals and gases. I have

\* Read before the Photographic Society of London.

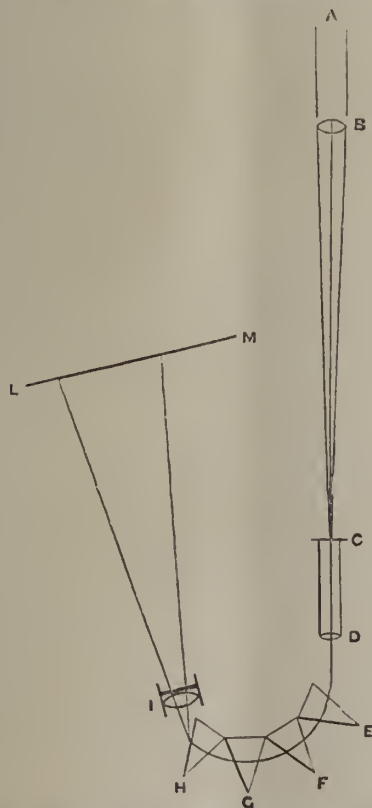


moreover, sought means to establish these coincidences in that portion of the spectrum visible to the eye: but all my efforts have hitherto been in vain to obtain photographic reproductions in the green, yellow, orange, and red.

I was, therefore, in a great hurry to employ the method indicated by Dr. Vogel; unfortunately, however, it was only during the last few weeks that I have been enabled to establish my apparatus satisfactorily. Another motive I had for repeating the investigations of Dr. Vogel was this: we know that all opticians, when they desire to construct a lens free from aberration for the chemical or actinic rays, always start with the assumption that the maximum sensitiveness of our photographic films is to be found near line G in the indigo portion of the spectrum. Now, if this maximum be displaced—as would have been the case upon the coloured surfaces of Dr. Vogel—there would be no plan of rendering an objective free from aberration in the above sense for all photographic processes alike.

Thus, a lens exempt from aberration for the ordinary collodion process would have a considerable amount of aberration when used with bromide of silver tinted red, yellow, &c. It became a matter of urgency, therefore, to thoroughly establish the soundness of Dr. Vogel's discovery, and I desired to do so with the most perfectly constructed apparatus.

The description of apparatus I employed was as follows:—At A was placed a heliostat, Leon Foucault's



construction, having a silvered mirror which reflected the rays in a horizontal direction. In the path of the solar beams I placed a condenser\*, five centimetres in diameter, and 90 centimetres focus. The solar image was thrown upon the slit C of the spectroscope formed by a collimeter

(C D) of 18 inches focus. The dispersion was obtained by four large prisms, of 45 degrees, made of Chanee's extra-dense flint glass. The lens of the spectroscope was replaced by a lens (I) of 90 centimetres focus, mounted in a bellows camera. The image (L M) of the spectrum is received upon a moveable plate in such a way that one may secure several impressions upon the same plate.

By reason of the considerable dispersion of the four prisms, it was impossible to obtain the whole of the spectrum upon one plate.\* Besides, focussing would be impossible, as every portion of the spectrum has a corresponding different focus. The spectroscope which I have just described is, in other respects, identical with that of Kirchhoff. It may be seen from the negatives which accompany this memoir that all the rays marked upon the spectrum of Kirchhoff, even the finest, are here reproduced. This fact, I think, will be taken as a standard of the precision with which I have worked.

My friend, Mr. Dallmeyer, will, moreover, exhibit to the members of the society a photographic reproduction of the Kirchhoff spectrum which I have produced expressly, and another image of the spectrum which I owe to the kindness of Mr. Rutherford, of New York, obtained direct by photography, and upon which I have marked all the corresponding lines of Kirchhoff.

When a wet collodion plate is exposed in the spectroscopic apparatus which I have just described (the opening of the slit being 1-30th of a millimetre) for a brief period—five seconds, for instance—a spectrum B is obtained, limited to the indigo. I have focussed this portion of the spectrum with particular care, and every one may see the absolute clearness of the lines, the finest corresponding to portions 2700 to 2870 of Kirchhoff. To do this it is necessary to place the plate against a well-lighted ground glass, and to employ a powerful magnifier.

The maximum sensitiveness of our plates for the solar spectrum is in the indigo. The same plate being submitted to an exposure in the apparatus for two minutes (see Plate I., spectrum A), the action extended on one side to H H' and on the other to E. But the clearness of the rays disappeared by a phenomenon analogous to irradiation. The lines spread on account of excessive development. Moreover, the focus having been made at G, all the other lines lack clearness.

In Plate II., line F was focussed; it carries three spectra, the first (C) exposed for four minutes, the two others twenty seconds. Upon this plate can be seen clearly in spectrum C all the lines comprised between G and b, and the image extends to beyond E, to 1450 of Kirchhoff.

I experimented with other wet collodion plates, but, notwithstanding a prolonged exposure, I was unable to get beyond the limit of 1450 in the Kirchhoff tables. Plate III. was focussed upon lines b b', and shows with exceeding clearness all the lines of Kirchhoff from 1660 to 1450. These last lines are wanting in Rutherford's spectrum, the latter, no doubt, not having employed a condenser.

Plate IV. represents two spectra obtained upon bromide of silver alone, without iodide in the collodion. The lower half of the plate has been submitted in the first place to the action of weak daylight for a few seconds. This last carries the spectrum H, the upper part of the plate the spectrum G. Each image has been exposed two minutes in bright sunshine.

This plate shows all the lines clearly, and proves that bromide of silver, employed in wet collodion, is not more sensitive to green than iodide, for the impression is identical with that of Plate III.

Finally, Plate V. is prepared with collodion containing a little coralline to tint the film red; and as I am entering here upon Dr. Vogel's experiments, I will detail my plan of working.

The collodion contains two per cent. of the double bromide of cadmium and ammonium; the silver bath was of

\* The object of the condenser is to give the spectrum a much greater degree of intensity than that possessed by direct solar rays only. The clearness of the rays is in no way affected if the opening (that is to say, the relation of the diameter to the focal length) of the condenser be less than that of the lens of the collimeter, and the prisms be of sufficient dimensions.

\* The total length of the spectrum was more than forty centimetres.



eighteen per cent. strength, and the plate was immersed for ten minutes. The plate was exposed for five minutes to the action of the spectrum, the focussing being made at E. The development was conducted with iron in the ordinary manner. I imperfectly fixed the plate, which is still red with the coralline it contains. An examination of the image shows that it is perfectly defined between H, I, and E. But it is evident that not a line has rendered itself visible in the yellow and red. In one word, the plates tinted with coralline and the untinted ones are identical. The same result was obtained with aniline green.

I then tried a dry plate produced with bromide of silver, placing in the preservative, coralline, Bismarck yellow, fuchsine, &c. In a word, I varied my experiments in every possible way, and in none of them did the image transgress the limit of 1450 of Kirchhoff. Indeed, on some of these plates I obtained no image at all.

I also experimented with coloured papers, but without any result.

I must confess that these negative results have filled me with surprise. Nevertheless, if my information is correct, in Bunsen's laboratory at Heidelberg no results also have been obtained. I have just received a letter from an illustrious French physicist who also tells me that he has obtained no results at all. From the Ecole Normale, and the Conservatoire des Arts et Metiers, in Paris; from Mr. Norman Lockyer, Mr. Spiller, and Colonel Stuart Wortley, in England; and Mr. Carey Lea, in America, the same negative results are reported. Therefore I conscientiously believe Dr. Vogel to be in error. An attentive examination of Dr. Vogel's memoir and my own results may, perhaps, be instrumental in discovering the origin of the error in which our estimable author has fallen.

Dr. Vogel affirms that the colours of the spectrum are absolutely pure. This is true in theory, but not so in practice. In the first place, I remark that Dr. Vogel uses a slit of a quarter of a millimetre in width, and only one prism of flint glass. This slit is ten times larger than those which are ordinarily employed, and does not allow one to see the lines of the spectrum with clearness. Besides (and this is an essential point) the glass prism is not absolutely transparent, and diffuses rays of every refrangibility over the whole photographic surface. Finally (and this applies especially to apparatus of several prisms), as the pencil of rays refracted by the prism has a large angle of divergence, it always happens that a portion of the red is reflected upon the interior wall of the tube of the eyepiece when the violet is under observation, and the violet is reflected when the extreme red is being observed. This is why coloured glass is always placed in front of the slit by Kirchhoff and others. If the red is being examined—especially in the neighbourhood of line C or A—a red glass is employed; or if it is the violet, then a violet glass is placed in front.\*

To convince the members of the society of this phenomenon of the diffusion of light over the whole surface of the photographic plate, I produced plate G with a direct-vision spectroscopic composed of five prisms, equivalent for dispersion to two prisms of flint glass of 60°. It is understood I have employed a small slit one-twentieth of a millimetre to render all the lines visible.

The upper spectrum was obtained in five seconds. It is limited by the blue and indigo. The spectrum in the middle has been exposed for one minute, the lowest for ten minutes. It reaches beyond the violet and red. When one is not on one's guard, it seems as if the whole spectrum has been obtained; but it is only the diffused light which illumines the prism that has acted, and the proof of this is, that neither the vertical lines which characterize solar

light, nor the long horizontal lines which come from the shutters of the slit, are visible in these parts of the spectrum. The spectrum of one minute and that of ten are in reality alike.

I am quite convinced that Dr. Vogel's plates do not show the double line D, nor the line C, nor the lines B and A of the solar spectrum. To obtain these lines with all the clearness of Fraunhofer's spectrum, only an ordinary spectroscopic is necessary, with one flint prism of 60°. But the slit must be narrow—for instance, about 1-20th of a millimetre. Neither, as has been affirmed by Dr. Vogel, is the bromide of silver, coloured red with coralline, so sensitive to the yellow and to the red as it is under ordinary circumstances to the blue and the indigo with a ten seconds' exposure to the solar spectrum. For, under these circumstances, in ten seconds I obtain the violet, indigo, and blue, with several hundreds of lines, upon a dry bromide plate.

If Dr. Vogel would expose in an ordinary spectroscopic, with a narrow slit, one of his plates for only a few seconds towards evening, he would find that he would obtain a splendid spectrum with all the lines of the solar spectrum, together with other lines due to absorption of atmospheric moisture.

The publication of a spectrum by photography in one of the journals is the most practical plan for Dr. Vogel to pursue in order to decide whether he has discovered a new process or not; for a photographic spectrum of these regions of the spectrum would be a proof beyond cavil of the results stated to have been obtained by him. All other arguments would be valueless against this.

At the same time, as Dr. Vogel promises, in reply to Mr. Spiller, to publish his method of proceeding in every particular, in Poggendorff's 'Annalen,' I propose, as soon as they are made known, to follow them accurately, and publish the result.

## HOW TO MAKE A POCKET CAMERA.

W. J. LANCASTER, F.G.S., ETC.\*

This apparatus consists of three parts: the camera, with its three double dry plate slides; the lens; the stand. In the first place we must describe the camera. This consists of a bellows body made of a strip of leather measuring 17 in. by 6 in.; this is glued end to end so as to make a hollow square measuring 4½ in. broad, and 3¼ in. high, being, of course, 6 in. long. The next process is to bend the corners so as to be able to fold the bellows. In the bellows of my camera we put five folds, the first, third, and fifth being bent down, and the second and fourth being bent upwards, so as to occupy smallest space possible. Let us assume, therefore, that a bellows is made which when folded measures 4½ in. by 3¼ in. by ½ in. Now stretch bellows out to full extent and glue into the inner surfaces a thin dead black linen; put bellows by for two or three days until glue is perfectly dry before attempting to mount it. Now, for making the front of camera, get a good piece of well-seasoned mahogany measuring, when planed, 5½ in. by 4½ in. by ½ in. in thickness, also two strips of good mahogany 4½ in. by ½ in. by ¾ in., and two 5½ by ¾ in. by ¾ in. These must be dovetailed together to make the framework to hold front on; they must have pieces of brass at each corner, clamping corners, and screwed into sides with small brass screws. The front piece must be planed down on back side for one inch all the way round to a thickness of ¼ in. This is on purpose to make the instrument more portable than it otherwise would be, at the same time leaving a space 3½ in. by 2½ in. in centre of front, having a thickness of a quarter of an inch, for the flange of a lens to be screwed on to, giving a good hold to screws. The front is now to be screwed and glued on to framework; we use about a dozen ¼-in. brass screws, three on each side. This gives to the front a firm appearance, and, although light, yet it is very strong. The

\* Or between the eyepiece and the eye. The eyepiece in photographic observations is the sensitive plate; therefore it is better to place the coloured glass in front of the slit.

• We slightly condense the above article from the *English Mechanic*.



bellows must be glued on to the back of the front, care being taken to completely glue the bellows all the way round, so as to prevent the smallest possibility of the ingress of light. The back portion of camera consists of a framework measuring  $5\frac{1}{2}$  in. by  $4\frac{1}{2}$  in. by  $\frac{1}{2}$  in., dovetailed and clamped with brass similar to the portion behind front board. This framework is a little deeper than front part, because of having to take the other end of bellows; the clear inside of back part is  $4\frac{1}{2}$  in. by  $3\frac{1}{4}$  in., and a depression is made in the front portion of this frame for glueing hinder part of bellows. Having now made skeleton part of camera, glue bellows to front part and also to back, so as to fold easily, and to measure, when folded, one inch. Then put a screw into back part on each side, and a small hook to clip on to screw, so as to keep two portions together when carrying.

Now as to the provision for holding slides. The back part of camera has two brass strips screwed on vertically, for slides to go up and down easily. The brass pieces are  $4\frac{1}{4}$  in. long,  $\frac{3}{4}$  in. wide, and about as thick as a worn threepenny piece. These strips are screwed on to each side with four brass screws. The tops of the strips are slightly rounded, so as not to break edges of slides when slipping up or down. At the top, across the camera, where slides move over, there is a narrow strip of black velvet, to prevent the passage of light down on to plate.

There is just one more particular to mention about camera: that is, the method of holding it when stretched out. This, of course, may be accomplished in many ways; a folding tail-board may be used, but this makes camera a  $\frac{1}{4}$  in. thicker when closed, and several ounces heavier for carrying. I have tried many methods, and have adopted the following, namely, a strip of brass 6 in. long and  $1\frac{1}{2}$  in. broad, and about as thick as a shilling. It should be made of hard metal. About  $1\frac{1}{2}$  in. from one end a nut is soldered on, with an inside thread to screw on to stand; in the end nearest to this screw make two holes as wide apart as the metal will allow: the holes to be about  $\frac{1}{8}$  in. diameter. These are for the purpose of holding camera front by means of two thumbscrews, the screws screwing into a brass plate, which is permanently fixed to bottom of camera. From the screws for stand to within  $\frac{1}{4}$  in. of other end of brass plate a slot is cut  $\frac{1}{4}$  in. wide, and on to the bottom of back portion of camera a brass plate is screwed with a projecting piece  $\frac{1}{2}$  in. by  $\frac{1}{4}$  in.; this is made to slide easily, and yet firmly, in the slot of brass plate. There is a screw which binds the plate to back of camera at any given point, according to focus of lens. Upon the top of camera put two small screws like battery screws, allowing a stocking-needle to pass through them, the needle being broken to suit greatest length of camera when drawn out. It will be evident that the camera can be made to swing either backwards or forwards by means of this needle and loosening of the screw underneath back of camera. Having now finished our camera, we must next turn our attention to the dark slides.

First, let us construct the ground glass slides. Take two strips of mahogany 4 inches long,  $\frac{1}{2}$  in. wide, and  $\frac{3}{4}$  in. thick; these are for the two sides of slide; then two slips of mahogany  $5\frac{1}{2}$  in. long,  $\frac{1}{2}$  in. broad,  $\frac{3}{4}$  in. thick; these are for top and bottom. They must be mitred at the corners, and a groove made on one side to hold a piece of ground glass  $4\frac{1}{4}$  in. by  $3\frac{1}{4}$  in.; the glass sinks into frame to its own depth, and is held down by four brass strips, one at each corner of the ground glass, screwed on either side of slide. The edges of this slide may be grooved, so as to slide down the brass works at back of camera; or the frame may be made small enough to slip through space between brass plates on back of camera, and in this case the focussing slide could be hinged on to top of camera, so that it could be bent over top of camera when exposing a plate. The dark

slides are the most difficult part of apparatus an amateur can attempt. The double dry-plate slide consists of two halves exactly alike, and hinged at bottom of each slide; the size of slide when upright is  $5\frac{1}{2}$  in. long,  $4\frac{1}{4}$  in. high, and  $\frac{3}{4}$  in. thick, each half, of course, being 3-16 in. thick. Each half consists of a framework similar to frame for focussing slide, and is made of two strips of mahogany for sides  $4\frac{1}{2}$  in. long,  $\frac{1}{2}$  in. broad,  $\frac{3}{4}$  in. thick; the bottom strip is  $5\frac{1}{2}$  in. by  $\frac{1}{2}$  in. by  $\frac{3}{4}$  in.; the top piece  $5\frac{1}{2}$  in. by  $\frac{1}{2}$  in. by  $\frac{3}{4}$  in. thick; the  $\frac{3}{4}$  in. taken off is to allow slide to move up and down. The four pieces are fastened together exactly in same manner as focussing slide, and have a space to hold a glass  $4\frac{1}{4}$  in. by  $3\frac{1}{4}$  in. in their inner sides, the outer sides having a groove from top to bottom to slide down brass strips on camera. The movable slide for exposing plate moves down a groove immediately in front of part to hold plate; this slide can be made of a piece of mahogany  $4\frac{3}{4}$  in. by  $3\frac{3}{4}$  in. by  $\frac{1}{2}$  in. thick, or can be made of tin or any metal same size as above. These slides are better when made in two pieces, and fastened together by a strip of leather, the hinge thus made being useful in preventing the slide slipping down when exposing a plate, and also preventing any light passing through space between camera and slide; at the bottom of this slide there is a narrow strip of wood, stretching across from side to side, to prevent the photographer pulling the slide completely out of dark slide. On the top part of the dark slide are two small pieces of brass, movable round a screw; these keep the movable slides down when carrying, and by turning the piece of brass round the slide is free, and can be raised. Supposing the two halves of the dark slide to be made, we must then devise a method of opening and of fastening them together when closed. This proved a slight difficulty to me when making the cameras in their present extreme portability; and, after many experiments, I made a small fastener on top of slides, which acts simply and well. A piece of brass  $\frac{1}{2}$  in. long, and  $\frac{1}{2}$  in. broad, and 1-40th of an inch thick, has a hole drilled through one end, and a slit filed in other end. The piece is screwed down on to one half of slide, and a screw is screwed on to other half of slide, so that when closed the piece of brass is pushed along, till the slit closes over screw, and holds them together. I put two of these small plates one on each side of the top of slide. The hinges are at the bottom of the slide, and each half of hinge is let into the corresponding half of slide, thus causing slide to touch in every part. But we have not yet made slide light-tight. This is easily done by making a groove all round one half of slide, immediately outside part for holding glass, and glueing strips of wood on other half, so that when closed the strips would push into grooves, and prevent the entrance of light. The movable slide has a piece of leather glued on to front surface at the top part, to enable one to lift it up.

#### YORKSHIRE EXHIBITION OF ARTS AND MANUFACTURES.—

An exhibition in connection with the Leeds Mechanics' Institute and Literary Society, and Schools of Art and Science will be held in 1875, to open on the first of May. The object of the exhibition will be to promote the fine arts, and art and science as applied to manufactures, and the surplus funds will be applied to the liquidation of the debt now remaining on the Leeds Mechanics' Institute. Subject to the necessary limitation of space, all persons, whether designers, inventors, manufacturers, or producers of articles, will be allowed to exhibit, but they must distinctly state the character in which they do so. Prices may be affixed to the articles exhibited, and sales effected; but articles once deposited in the building will not be permitted to be removed without written permission from the Building and Space Committee before the close of the exhibition. The classification of the exhibition will be as follows:—Department I. Arts and Manufactures.—Department II. Fine Arts, including paintings in oil and water colours, and drawings; sculptures, models, die sinking, and intaglios; etchings and engravings; antiquities; photography.



# The Photographic News.

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## PRINTING FROM TWO NEGATIVES.

IN a recent article on Denier's method of producing prints of peculiar softness and fine modelling, which qualities were due, as we were enabled to state, to the use of two thin negatives, one placed behind the other, we pointed out the powder process as best suited for the production of such duplicate negative. The same idea as to the application of the powder process to such purpose had, it appears, occurred independently to Mr. B. J. Edwards, who at the last meeting of the South London Society exhibited a result obtained by this application. He showed a print obtained from a good thin, sharp negative, and a print from the same negative with a duplicate negative image placed behind it. The latter was decidedly an improvement upon the first, although the first was an unusually fine picture. The print obtained when the light traversed two negatives had, as in Denier's portraits, a peculiarly rich, solid, and artistic quality. Whilst there was perfect definition as to the result of the contact negative, there was a peculiar fullness of modelling, and a singular softness without fuzziness, produced by the light passing through the negative not in contact.

In Mr. Edwards' experiments, he had placed both the negatives on one glass, the duplicate being on the back of the glass containing the original negative, in manner similar to the duplicate negatives we described some time ago, obtained by coating both sides of the glass with collodion, and producing the duplicate image in the camera. Mr. Edwards coats the back of his negative with the bichromated syrup, and exposes the front to parallel rays, so as to secure a moderately sharp image by printing on the sensitive film through the glass. We presume that the exposure must be a full one, as the light impinging on the under side of the bichromated film must pass quite through it in order to give a satisfactory image, and admit of developing by application of the powdered plumbago. It seems probable that a better plan would be to take the duplicate negative in the ordinary way by the powder process, upon a separate glass, adopting the plan, however, mentioned by Mr. Woodbury in our last, of giving the glass a preliminary coating of collodion. The completed duplicate negative being, after transfer, contained between two layers of collodion, may be used in that form without a glass support. It may then be used in any position the photographer may choose, either at the back of the original negative, or in contact with its face, or with some thin medium interposed, so as to modify the effects to be produced. In producing the duplicate negative on a separate support of thin tissue, rather than at the back of the original negative, other advantages are gained, and inconveniences avoided. In case of failure in deciding the right exposure, the duplicate on a separate plate is more easily examined than when it is in inseparable contact with the original, and

less trouble and risk are involved in repeating the operation, in case of failure of any kind, with a separate plan, than when the plate used is the original negative itself. Although Mr. Edwards assures us that there is no trouble or danger to the original negative in submitting the duplicate at its back to the necessary washings, many photographers would, we imagine, prefer not to incur the possible risk with a valuable negative.

As the powder process allows the production of duplicates which vary the effects of the original, permitting the operator to secure excess of detail or excess of contrast at will, and permitting, even, of variations in the light and shade of the background, by applying the plumbago more persistently in some parts than in others, it is manifest that considerable scope to the artistic taste and skill of the photographer, in producing and printing from his duplicate negative in contact with the original, is offered in this process. A recent letter from M. de Constant indicates the collodio-chloride process as the method employed by M. Denier in obtaining his duplicate negatives. M. de Constant thinks the results obtained by M. Denier so exceedingly perfect and charmingly artistic, that he suggests to us the wisdom of inducing a number of English portraitists to combine to purchase all the details of the method. It is manifest that the collodio-chloride process presents facilities for obtaining very perfect duplicate negatives; but the powder process, we are bound to admit, presents simpler facilities, with a wider range of modifying power; and to all who feel interested in experiments in artistic printing we commend a plan which in trouble costs so little, and in result promises so much.

## LAWS OF THE PHOTOGRAPHIC SOCIETY.

THE new draft of laws is now in the hands of the members of the Photographic Society, and a special meeting will be held on the 30th instant, for the purpose of considering, and, we presume, adopting them. The chief difference between the draft laws just sent out, and the old laws, which have been in force for so many years, consists—besides securing more precision on many points—in the conditions of office and the mode of election. The chief difference between the present draft and that sent out about three months ago consists in brevity, the present draft comprising eleven laws, whilst the draft of March consisted of twenty-five sections and seventy-six clauses, involving, in the aim at precision, an excessive amount of detail which was calculated to defeat its end, and issuing in prolixity rather than clearness.

The first noticeable point in the new draft is the title of the society, which is changed from the "Photographic Society of London" to the "Photographic Society of Great Britain," and thus is heralded, we presume, the aim which is afterwards apparent in the laws, to give a more national character to the society by invoking the action of country members in all vital matters concerning the interests of the society. The tenure of office is modified. The office of president, instead of being for life, as under the old system, is now proposed to be the subject of annual election. Whilst, however, the president will retire annually, he will always be eligible for re-election, so that whilst an inefficient president need not be retained longer than one year, an efficient president may be retained in perpetuity; and whilst these advantages are gained by the society, a higher honour is paid to the president who is re-elected year after year, than could be involved in the continued retention of office without re-election. Of the three vice-presidents, one must retire annually, in the order of seniority. This perpetuates the old law; but with the difference that formerly the retiring vice-president was eligible for re-election to the same office; now, whilst eligible for election into other offices, he will not be at once eligible for re-election as vice-president. Six members of the council will retire annually, but they will be eligible for



re-election. This leaves the absolute control of the matter in the hands of the members themselves. If it be their will that an infusion of new blood into the council, to the extent of one-third of its constitution, be desirable, they will have the power to elect six new members; but if, on the other hand, they find amongst the six members of council retiring in the order of seniority some gentlemen whose services they deem it important to retain, then the eligibility for re-election removes any bar to such retention. Laws should never trammel the body for whose government they are made, nor prevent them doing anything which, *per se*, they have a right to do; and a law which should say, "You shall not re-elect certain individuals to office, however desirable it may be for the interests of the society to do so," would so trammel the members, who, in a body possessing comprehensive voting powers, should have the right to say by their vote at any time what is the best thing to do at that moment.

The voting for the election of officers is to be the work of the whole society—not simply the privilege of a few metropolitan members—and the duty of nominating officers for election is also delegated to the entire members, instead of being confined, as some have proposed, to those members who chanced to be present at a meeting preceding the annual meeting. Every member of the society will be at liberty to nominate as many officers as there are vacancies, by writing in proper time to the secretary, and every nomination, together with the names of retiring officers who are eligible for re-election, will be printed on voting papers and sent to every member of the society, with instructions as to how to deal with them, striking out all names but those for whom he may desire to vote. The voting paper thus marked will be returned to the secretary in an envelope sent for the purpose, and of a character which will identify its contents as a voting paper. This envelope, being delivered unopened to the scrutineers appointed by the meeting, will carry out all the aims of the ballot, as the papers will be unsigned; and whilst precautions are taken to avoid a paper reaching any hands but those of a member, equal precautions can be taken to avoid identifying the voting paper received from any member. Such is the plan of voting proposed, and it is, so far as we can see, free from any form of objection. The nomination in open meeting which has been advocated by some is here superseded by a plan possessing all the advantages, without any of the disadvantages, of the other method. Nomination in the meeting is a plan open to many objections. It is an unnecessary waste of time; it limits the privilege of nomination to members present in the meeting; and it is offensive and invidious. Just in proportion as it may be considered an honour to be elected into the council, it might become a reproach to be publicly and demonstratively proposed, and then fail to be elected; whilst the written nomination would render defeat a much less obtrusive annoyance.

A variety of minor points of change of law, are made in the draft just sent out, the precise bearing of which will be best seen by comparing the draft with the old laws. The main changes refer to the election of officers, and an important clause is added to Rule XI., having reference to changes in law at special meetings. In the draft it is laid down as a condition that no change in the laws can be effected without the consent of the society at large, every member having the right to vote on such questions. Such a provision will prevent serious changes being effected by small majorities in special meetings, and entirely obviate the possibility of misunderstandings similar to those which have recently disturbed the peace of the society. It destroys, in fact, the power of faction: small combinations to effect a given purpose in a special meeting will henceforth be useless, as a majority of the members alone can affect any vital change in the constitution or the executive of the society.

#### ARTISTIC ARRANGEMENT OF GROUPS.

"The first thing I look at when I have a group before the camera," Mr. Rejlander once remarked, "is the outline of the picture it produces. The filling in may be considered next; but it is of imperative first importance that the outline should be right, and form a picture." As a rule there is no task more diligent to the portraitist than the management of a group. In order to secure something of pictorial effect as well as likeness, the figures must be arranged so that they will compose well, and give a satisfactory balance of lines and masses. Then they must be all in focus, and there must be something of variety in arrangement of the various figures. The mechanical difficulties are serious enough, and must be met as they arise; but it is important to have some definite artistic ideas as a primary condition of pictorial success. Here are a few valuable hints, the remembrance of which may be useful, contributed to our Philadelphia contemporary by Mr. Bigelow, whose album of lighting and posing is well known. Mr. Bigelow says: "It is difficult to apply art rules in making up photographic groups, from the fact that in art compositions there is one or more central or important figures to which all the others are secondary and supporting; while in photograph groups for portraiture all are supposed to be of equal importance, and individuals must not be slighted pictorially, or the sale of the picture is assuredly lost; for this or that figure is not as good as its neighbour. In genre compositions of course we are not limited in this direction, but our greatest obstacle is to group our subjects in such manner as to gain perspective, and overcome the appearance that they are placed in a line like soldiers on dress parade. I know of no way by which perspective may be obtained better than by placing in the foreground low objects or pieces of furniture which tend to break up the line appearance, and also give depth to the picture. All ambitious photographers should know what constitutes angular, pyramidal, and circular grouping, for otherwise many mistakes will be made which this knowledge would have prevented. Special attention must be paid to side lines, or those lines which run parallel to the sides of the picture. Break these lines all you can. For instance, if a chair is placed near the margin of a picture, set it with the back toward the centre; or if turned the other way, be sure to set some lower object between it and the margin, and near the chair, which you at once see breaks up the effect of parallel lines formed by the back of the picture and the margin line. If a curtain were draped just back of the chair, it would do just as well to break the lines mentioned. The lines of a curtain should be draped from the margin toward the centre of the picture, and so in principle must be the arrangement of all accessories in photography, portraiture or grouping."

#### FRENCH CORRESPONDENCE.

Of the eighty-four exhibitors this year at the Photographic Exhibition at the Palais de l'Industrie, twenty-three have forwarded specimens of carbon printing, printing in greasy ink, photo-lithography, photo-engraving, enamelling, &c.; in one word, examples of processes in which the employment of silver salts is excluded. At the last exhibition, in 1870 there were but sixteen exhibitors of these kinds of photographs out of one hundred and nine. From fifteen per cent., therefore, the proportion has been raised to thirty per cent. Moreover, it must be pointed out, that of the exhibitors of 1870, many had sent pictures merely as the results of trials and experiments, whereas those exhibited at the present time are for the most part specimens of processes in actual working order, or which are being employed industrially.

For a long time M. Lafon de Camarsac was the only producer of enamels in France, and after him came M. Mathieu Deroche. This year we find, besides the latter, MM. Gougenheim and Forrest, Mdlle. Mezzard, M. Pinel



Peehardière, MM. Geymet et Alker, and M. le Comte de Roydeville. Not only are M. Lafon de Camarsac's rivals at the present day very numerous, but the productions that they exhibit are quite worthy to compare with his. There is progress to be observed everywhere in the application of the colours, and the paintings on enamel which these artists show the public are, in fact, very pretty miniatures.

As regards printing in carbon, M. Braun still enjoys the first place among the exhibitors. He has so overcome the difficulties of this process that he seems capable of producing pictures of any dimensions. Among the pictures he exhibits, there are some measuring not less than a metre square, and which, nevertheless, are without even the slightest defect.

As to other exhibitors who have sent work of the same kind, their number, artistic qualities, and variety, prove to the most sceptical partisans of routine that this method of printing is quite as practical as that of silver salts.

Many well-known photographers occupying themselves with carbon printing—MM. Gobert, Jeanrenaud, Fargier, Soulier, Piot, Marion, &c.—have abstained from exhibiting on the present occasion; otherwise the proportion we mentioned at the commencement of this letter would have been more considerable. It is an obvious fact, therefore, that the new processes have been very extensively developed during the last year or two.

As regards heliographie engraving, M. Rousselon is developing upon a large scale, for MM. Goupil and Co., a most beautiful process, of which we have already spoken, and which has gained for him this year a *medaille d'honneur*. In another direction, MM. Lefinan et Lourdell, as also MM. Yves and Barret, furnish daily to illustrated journals a considerable number of typographical blocks by means of photography, the processes having a good deal of analogy between them. A design of any kind is given—whether a page of manuscript, an old engraving, &c.—and in the space of forty-eight hours they return a block engraved in relief, representing the original in every detail, either of the same dimensions, or reduced or enlarged, as the case may be. The blocks are ready for printing in any printing press; and although some years ago their production would have been looked upon with wonder, they are now produced at the rate of fifteen centimes (three halfpence) the square centimetre.

It may be imagined with what eagerness editors of illustrated journals, and such like publications, profit by the advantages of this process, and the firms to which we have alluded can scarcely supply the large demands made upon them.

With regard to a letter published by M. Quiquerez in the *Moniteur de la Photographie* of the 19th May last, I have just received from M. Thierré some remarks about his method of sensitizing albumenized paper. M. Quiquerez expressed some doubt respecting the advantages of adding alcohol to the silver bath, and M. Thierré essays to dissipate such doubt, not to sustain his reputation as an author, but because long experience in the matter has confirmed him more and more in the view he advocates. M. Quiquerez says that the dry albumen is not coagulated, to which his opponent replies: I have tried carbon printing, and for my support I employed albumenized paper, not salted, which was sometimes coagulated by means of alcohol, and sometimes by the aid of hot water. In both cases I obtained complete coagulation of the albumen. Other substances, such as bichloride of mercury, nitrate of silver (and it is this only that is employed for sensitizing, in the form of a twelve or fifteen per cent. solution), coagulate dry albumen, as all the world knows.

Our correspondent moreover remarks that M. Quiquerez himself proposes to coagulate salted albumenized paper by immersing it in alcohol before sensitizing it upon a silver bath. M. Thierré raises two objections against such a course: in the first place, he employs one operation instead

of two; and, again, his method is more economical, which consists in adding to the silver bath a relatively small proportion of alcohol, sensitizing and coagulating the paper at the same time. What proves, according to him, that in this process the coagulation is complete, is the circumstance that the bath is never discoloured, and it is never necessary to expose it to the light. He adds, that for the last three weeks the temperature in his studio has been 20° Cent., and although his bath has not been refreshed during the time, the solution has not become tinted, which is a proof that it contains no organic matter.

As to ammonia fuming, which is generally used with advantage when a weak bath is employed, it is not necessary when the albumen is coagulated by an alcoholic silver bath. M. Thierré has made the experiment, and found that the only advantage was an increase in the rapidity of printing; but the toned and fixed print under these circumstances had not such a nice tint as usual. It may be added that M. Mevins, the skilful English photographer established at Rennes (Ille et Vilaine), whose acquaintance I had the pleasure of making during a recent journey to Paris for the purpose of acquiring the sole license for Lambertype in the district where he lives, told me that for years he had only employed alcoholic silver baths, and had found them exceedingly satisfactory.

I profit by this occasion to return my thanks to Mr. Davies for his communication, through the *PHOTOGRAPHIC NEWS*, relative to the existence in commerce in England of coagulated albumenized paper. This is an example which our manufacturers will make no difficulty in following.

M. Sutton has just communicated to me that he has published in my journal a process termed "Coloured Carbon Enamel," which allows one to obtain very easily a new kind of portrait which will certainly give satisfaction to the public. The resumé of the process is as follows:—A sheet of carbon tissue is taken and sensitized by plunging it for half a minute in an almost saturated solution of bichromate of potash. After drying in the dark, it is exposed under a cliché for a third of the time necessary to produce an albumenized silver print. The tissue is then immersed in a bath of cold water, and applied to a glass plate. After a few seconds, the plate upon which the tissue adheres, face downwards, is put back into the bath, and a squeegee passed over it to make contact more perfect. It is then removed to warm water, and the image developed upon the glass plate: the portrait is then painted on the back, using opaque oil colours for the purpose, which are applied with a very soft brush. It is necessary that the colours should be perfectly opaque, in order to penetrate the image, and afford a backing to it. This mode of painting is identical in principle to the Neoleopainture which I described a little while ago; it does not interfere with the details of the picture, nor destroy the likeness in any way.

ERNEST LACAN.

## PHOTOGRAPHY FROM A SANITARY POINT OF VIEW.

BY DR. H. NAPIAS.\*

*General Aspect of a Photographer's Work.*—We may commence this subject by saying that there is nothing in a photographer's every-day work that is of a nature to be prejudicial to health. There are, for instance, none of those movements incessantly repeated, none of those constant performances to be met with in other professions, which so often become the source of maladies and deformities. Nevertheless, those occupied with retouching, labouring at a work which tells upon the eyesight, may experience a tiring and weakening of the eyes. Retouching of negatives, especially, may occasion some physical troubles.

The evil is also met with in the case of photographers who prepare tiny microscopical impressions, either for scientific purposes, or as curiosities to be put in a piece of



jewellery or on the head of a stick. A photographer who was under my care, and who, during the late war, was attached to the photographic service occupied with the reduction of microscopic despatches, had his eyes in a state of congestion in the centre of the orbits, together with chronic inflammation round the eyelids. This photographer, who still occupies himself with microscopic photography, noticed that the inflammation became worse every time he fatigued himself a little more than usual, and woke in the morning with his eyelids sealed down with mucous matter. In a case like this it is best to use spectacles of ordinary blue or smoked glass, and to wash the eyes morning and evening with rose water, or even three or four times a day. But it is far better to try to prevent the disease by having recourse to proper precautionary measures. A simple washing of the eyes with fresh water whenever they have been exercised for a long time or very attentively, and adopting the precautions of not reading or performing any work during the evening, as likewise not smoking, and taking but little wine and coffee, and no spirits, are the best means to take under such circumstances. Measures such as these will have the effect of preserving the first and most important of our faculties—our eyesight.

Another injury may arise from the curved position assumed by the operator in the process of retouching. It may happen to the retoucher, as it does to the copyist, the writer, the clerk, and all those who work in this attitude, that they suffer from a pain between the shoulders, from cramp in the stomach, and injury, more or less great, to the digestion. But from these maladies there is little to fear by those who enjoy good health, who take moderate exercise out of working hours, and, living a steady life, have good food, and abstain from an excess of alcoholic drinks.

To resume: we may here repeat what we have already said, that there is nothing in the photographer's calling really injurious to health or to life. The danger does not lie here; it is rather in the ethereal atmosphere which those who follow the profession breathe continually, and to ameliorate the effects of which we have recommended some precautionary measures to be taken. Danger lurks likewise in the daily manipulation of certain irritant and tonic chemicals, a subject with which we shall now proceed to occupy ourselves.

*On the Action of Chemical Substances in General.*—All chemical products exercise disturbing effects upon the human system, and these actions, if wisely regulated, become in medicine of very great assistance; but if such compounds are employed ignorantly, or in too large quantities, they are greatly prejudicial to health, and bring about what we term a poisoning action.

As a matter of course, all chemical compounds do not possess the same amount of energy in their action, and there are some which are only injurious when taken in wholesale doses, so that it may be asserted no fear need be entertained from their use. But there are others, again, which act upon our systems with extreme violence, either by corroding the tissues with which they come into contact, or by penetrating deeply into the body by rapid absorption, and directly influencing the circulating organs, or, what is more important still, our delicate nervous system. Of these truly poisonous agents there are several in use by photographers, and others are daily coming into play. Among them may be enumerated: cyanide of potassium, nitrate of silver, bichromate of potash, bichloride of mercury, &c. We propose to say a few words on the subject of each of these preparations.

*Cyanide of Potassium.*—Cyanide of potassium is employed in the form of a solution for fixing images upon collodion. Photographers, also, are in the habit of using the noxious drug for removing from their hands nitrate of silver stains of all kinds. This latter is a most dangerous and reprehensible practice, for the salt is, without doubt, one of the most violent poisons we have, even in small quantities, and it is, moreover, a substance easy of absorption, and one

so sudden and rapid in its action that it is difficult for medical aid to step in in time to stop its baneful effects. It would be desirable, indeed, that such a compound should disappear altogether from the photographer's laboratory, and other chemicals are not wanting to replace it.

The energy of this poison is such that it is only necessary for a cut to exist, or an abrasion of the skin, in order to bring about absorption, when a solution comes in contact with the hands, and in this case, results of a most serious character at once ensue.

Photographic operators who so often work with the dangerous substance, and in a manner, too, both thoughtless and imprudent, often have their fingers chapped and cracked in winter time by the frost and damp, and the existence of such wounds in the hands during the manipulation of cyanides opens the door to fatal accidents. And accidents from this poison are by no means rare. They do not, it is true, always bring about death, and the greatest number are fortunately of a mild character, but there are cases of paralysis and other nervous diseases which are the effects of such accidents, and which should cause operators to reflect, and put them on their guard. Unfortunately they do not heed the lessons thus given, and the cases of accidental death that have come about by the imprudent employment of cyanide of potassium do not, of themselves, suffice to correct the habitual carelessness of photographers in the matter.

Let us add, finally, that there are to be found among photographers, as among other classes, unfortunates who are so unconscious of duty—so oblivious of the dignity of human nature—that they quit voluntarily their place in the battle of existence, desert life, and commit the crime we call suicide. These have looked around them, among the materials in use in their profession, to see which of them all would the swiftest, most surely, and least painfully aid them to attain their sad and miserable end; and it is to cyanide of potassium that they most frequently have recourse.

It is because photographers are liable to see and hear of cases of poisoning by cyanide, absorbed either voluntarily or involuntarily, that we deem it right to indicate the symptoms of such poisoning, and the means for relieving it.

The first effects of cutaneous or digestive absorption of cyanide of potassium, even when taken in minute doses, are great pain in the region of the heart, headache, giddiness, deafness in the ears, sleepiness, and a painful respiration, which is sometimes slow and sometimes fast, but which is always interrupted by profound sighs. If the dose is larger, and especially if the poison has penetrated into the stomach, the patient experiences a bitter taste in the mouth, a burning in the throat and stomach, a desire to vomit, a great increase in the secretion of the saliva, and diarrhoea. At the same time the pulse is feeble, and even insensible; the eyesight is troubled, the pupils are dilated, and the eyes appear enlarged. A cold perspiration suffuses the body.

In very grave cases a general prostration is manifested, interrupted from time to time by convulsions. Every movement ceases, and death ensues in a syncope. All these phenomena come to pass with terrible rapidity, allowing one barely time to observe them, much more to interrupt them.

After a cure has been effected, whether by reason of the insufficiency of the dose, or, artificially, by reason of prompt and energetic remedies, it is never altogether complete. Nervous affections come on, and remain for a considerable period; frequent giddiness in the head is experienced; one is troubled with pain in breathing, and sometimes a partial paralysis of the muscles ensues.

Whenever an accident happens from cyanide, from imprudence—say, for instance, in the case of an operator placing his chapped and broken hands into cyanide solution—the first thing to be done, in the case of a symptom of giddiness or fainting being felt, is to wash the wound in



chlorine water—that is, water saturated with chlorine at the ordinary temperature. The patient should also immediately take two or three grammes of the same in a glass of water without waiting to put a piece of sugar into it. He is at once put to bed, and covered with warm blankets, hot water bottles being placed at his feet and along the whole length of his body: or, if a bed is not handy, he is placed on the first couch or sofa, and wrapped warmly in coverlids or garments. The windows are opened everywhere, for while it is necessary that the patient should be warm, it is requisite also that he should have plenty of air, and that it be very pure.

In the meanwhile a messenger has been despatched to the nearest chemist's for a few grammes of laudanum. Tea or coffee is prepared, and sugar and rum or brandy are obtained, and the patient receives a cup of tea or coffee with ten drops of laudanum and one or two spoonfuls of any alcoholic liquid, such as rum or brandy; *kirschwasser*, however, must on no account be given. A cup of tea or coffee with the same quantity of laudanum (ten drops) may be given three or four times running at an interval of a quarter or half an hour.

If the accident has been marked at the commencement by very serious symptoms, and if the cyanide has been taken internally, then, without hesitation, five grammes of chlorine water should be given in a glass of water. The patient is put to bed, with plenty of warmth and air, as just described, and he should be allowed to breathe frequently over a vessel of chlorine water placed under his nose. Every quarter of an hour a cup of tea should be taken, with cordial of some kind, and ten drops of laudanum (not more, however, than four or five cups being given), and every five minutes a teaspoonful of the under-mentioned potion is administered:—

Chlorine water	...	5 grammes
Chloro-hydrate of ammonia	...	2     "
Sugar water	...	250     "

As soon as the patient seems to be growing better, the laudanum in the tea is suppressed, and the potion is taken only every quarter of an hour, and afterwards every half hour. This treatment does not, however, remove the responsibility of sending for a medical man, who, on his arrival, will continue or modify the regime according to discretion.

One of the antidotes against cyanide of potassium is said to be a mixture of hydrate of protoxide and peroxide of iron. It is, no doubt, a very good specific, but, besides the fact that it is not usually at hand, it is, we think, scarcely so efficacious, nor so easy to absorb into the system, as chlorine.

Ammonia has also been mentioned with favour, and with some right too. If chlorine is not at hand, it would be well to get the patient to breathe ammonia vapour, and to administer to him fifteen or twenty drops of liquid ammonia in a glass of water.

The application of cold water to the vertebral column seems to have succeeded in some cases of poisoning by prussic acid and the cyanides. If we do not counsel such a course, it is because it must be conducted by a skilful hand, and only in cases where the medical man thinks such a course desirable. Applied without care, a chilling action might be produced, which favours the noxious action of the poison.

The means we have recommended—chlorine, laudanum, tea, and coffee, with rum—are not only the best and most efficacious; they are also those whose employment we consider the most simple and most convenient.

But it must always be borne in mind that cyanide of potassium always acts with extreme rapidity, and that the delay of a minute, or even a second, in the application of the remedy may be altogether irrecoverable. For this reason we would suggest that in all laboratories and studios there should always be kept a supply of chlorine water and laudanum ready in case of accident.

It is only, we repeat, by having recourse to prompt and

immediate action that there is any chance of combating against poisoning by cyanide of potassium, until that dangerous compound is banished altogether from the photographer's studio. But it is not only on account of accidents that we should be glad to see cyanide of potassium disappear from the chemical laboratory, for accidents happen from ignorance and imprudence, and, consequently, may be avoided; it is by reason of its dangerous influence at all times, for the vapours of hydrocyanic acid and iodide of cyanogen which are disengaged in photographic manipulations are also poisonous and injurious to breathe. Every photographer knows this, and all are cognisant of the headaches and giddiness they give rise to. Ammonia may be beneficially used to give relief in these cases.

(To be continued.)

## ON THE CONTRACTION OF THE COLLODION FILM.

BY DR. H. VOGEL.\*

The results of Paschen and Rutherford upon the construction of the collodion film have already appeared in these pages. They differed very much from one another. Paschen found a contraction in the film of one six-hundredth, while Rutherford stated that it amounted to a twenty-four thousandth only. These very important differences can only be explained by the assumption that the contraction in different collodions varies very much, and this assumption is supported by practical experience.

To investigate the matter thoroughly, I tried several collodions of Berlin, St. Petersburg, and Paris manufacture, and obtained at once the most varied results. The contraction of the film often betrayed itself during the washing of the plate; the collodion left the margin of the plate, and on drying the edge of the glass was at some distance from the border of the film. In this way, however, I only remarked the worst forms of contraction. To observe the less remarkable phenomena I had recourse to the following process.

Upon a glass one hundred and ten centimetres in length were scratched, by the aid of a diamond, a net-work of lines crossing each other at right angles, the strokes being provided with numbers. Under this network the films of collodion to be tested were exposed to light, strips of writing-paper being placed between the surfaces to prevent the collodion coming into actual contact with the scratched glass. The paper between was so thin that the lines printed perfectly sharp; but it was necessary that, before exposure, the plates should be allowed to drain for four or five minutes, so that all the liquid might be removed.

The exposure of the plates was managed by the opening and shutting a window in the dark room, whilst the plate was held at a distance of ten feet from it in an upright position parallel to the window.

The exposed plate was developed partly with sulphate of iron solution, and partly with pyrogallie acid; in the case of dry plates, alkaline development was employed; and for fixing, both soda and cyanide of potassium. Indeed, everything was essayed as in the case of actual practice. To test the amount of contraction, the plates, when dry, were placed upon the network, and examined by transmitted light. It was easy to compare the lines printed upon the film with those scratched upon the glass.

In this way the two surfaces were put under a microscope magnifying five-and-twenty diameters. With this power the division between the lines, which amounted to one-fiftieth of a millimetre, was easily recognisable. The total contraction could, therefore, very easily be estimated. If, for instance, at one end, the two lines were coincident, while at the other end, at a distance of ninety millimetres, one overlapped the other by a fiftieth of a millimetre, then the contraction would be equal to  $\frac{90}{50} = 1.80$ .

\* Photographische Mittheilungen.



In my first experiments the results furnished by various thick and tough collodions were very different, and for this reason I placed these on one side. The most suitable collodions which, according to preliminary experiments, contracted the least, were Mann's collodion from St. Petersburg, and Schering's collodion. With both these compounds I made more searching investigations. A material was prepared according to the following formula:—

Pyroxiline ...	...	...	2 parts
Alcohol ...	...	...	50 "
Ether ...	...	...	50 "

And to this compound was added, to the extent of one-third its volume, of the following,—

1/100 of cadmium ...	...	5 parts
Bromide of cadmium ...	...	1 part
Alcohol ...	...	90 parts.

I found that the contraction of the film depended very much upon the amount of adhesion existing between the collodion and the glass. As soon as the film in washing has become loosened from the margin of the glass, or as soon as water gets between the film and the glass, or the former is ruptured in any way, then contraction of the film at once sets in.

It is therefore indispensably necessary, when contraction is desired to be avoided, to prevent any separation of the film from the glass when the plate is in a moist condition. This can only be brought about by giving the plate a preliminary coating of albumen or india-rubber, or the latter may be applied to the margin of the plate. The same holds good with dry plates. It is only in the collodion-albumen process where such a preliminary coating is unnecessary, for here albumen penetrates through the collodion, and cements this down.

I employed, in the first place, india-rubber applied to the margin of my plates, which were coated with Schering's collodion. The following plates were prepared:—

1. Collodion film on polished glass surface, margin of india-rubber, fixed with soda, and varnished.
2. Collodion film on polished glass surface, margin of india-rubber, fixed with soda, and not varnished.
3. Collodion film on an albumen substratum, margin of india-rubber, fixed with soda, and not varnished.
4. Collodion film on polished glass surface, margin of india-rubber, unfixed, and not varnished.
5. Collodion film on polished glass surface, margin of india-rubber, fixed with cyanide, and not varnished.

Of all the plates here enumerated, only No. 1 showed signs of contraction. This seemed irregular, and in some parts there was, indeed, a slight expansion of the film; all the other plates agreed very well with the original. Afterwards, Mann's collodion was used in the preparation of a similar number of plates, and in this case, too, No. 1 (the varnished plate) showed an irregularity as before. No. 2 showed a very important contraction on that side where the collodion was thickest; the contraction amounted to  $\frac{2}{3}$  of an inch. On the thinner side the contraction was not noticeable. The albumenized plate behaved in like manner; on the side where the collodion was thinner no contraction had taken place, on the other it amounted to  $\frac{1}{4}$  of an inch. Plates 4 and 5 showed a slight contraction on the thicker side, but were otherwise perfect. Thus it may be inferred that the Schering collodion collodion is the more stable one.

This celloidin collodion is somewhat more limpid than that of Mann, and from this fact, as also the circumstance that the contraction was remarked upon the thicker, and not upon the thinner, parts of the films, led one to the belief that the consistence of the collodion exercised great influence in the matter. To prove this, Mann's collodion was diluted with one-third its volume of alcohol and ether, and a series of plates again prepared with the same. I found that the collodion attached itself more firmly to the glass under these circumstances, a fact which spoke much in its favour.

The contraction in the case of the dilute collodion was notably less than in the thicker material. A quite unimportant degree of contraction was exhibited upon the albumen plate, on the thick side of it, which was certainly less than 1-600th. The varnished plate, and that fixed with cyanide, were good.

From this it follows that contraction is less liable to ensue in a thin than in a thick collodion.

The celloidin collodion, I found, was subject to contraction when containing more than one and a-half per cent. of pyroxiline; thick residues from the collodion bottle gave films which contracted on the thick side of the plate to the amount of 1-4500th.

Under these circumstances I am not surprised that the Fothergill plates tested by Dr. Weinesk and Dr. H. C. Vogel betrayed no trace of contraction, for these are prepared with very thin collodion, containing but 0.9 per cent. of pyroxylene.

In conclusion, I tried, instead of a margin of india-rubber, a preliminary coating of the same material all over the plate. One part of india-rubber was dissolved in one hundred parts of chloroform, and this was subsequently diluted with 900 parts light benzole. This dilute and perfectly clear liquid was applied to the glass plate; the film dried very rapidly, and yielded, with the wet process, images of great clearness, and quite free from any visible contraction. The india-rubber solution is easily manipulated, and may be recommended in place of the so easily decomposed albumen solution.

Next, some dry plates were essayed of bromide of silver, the films being prepared with Mann's collodion. Their preparation was conducted in the simplest manner by coating a polished plate with a margin of india-rubber solution, with bromide of cadmium collodion, sensitizing the same, and then washing it. One of these plates was developed with alkaline solution, the other with an acid one of sulphate of iron. In the latter case the film became loosened during its development, and separated from the edge of the plate. After drying, a great degree of contraction was apparent, to the extent, namely, of 1-300th.

It is known that in the wet process a film will become much contracted through continued application of an acid developer, and the same thing occurs in a most marked degree when dry plates are much forced with an acid developer. The alkaline developed films held fast to the plates during development, and showed no signs of contraction. It was different, however, with Wortley bromine plates, which contain gum, for these showed, on treatment with an alkaline solution, both a lifting and contraction of the film.

It may be taken for granted, therefore, that dry plates which do not contain gum have perfectly stable films, and for this reason preservatives of this kind should be avoided when great stress is laid upon the rigidity of the collodion surface.

Bromide plates require very careful handling, and their perfect production under the vicissitudes of travelling would be very questionable. For this reason I experimented with another dry method, that of morphine. This is a very simple process, for no other chemicals are required beyond the morphine itself. The plate is prepared in the ordinary way, and then covered with a very dilute morphine solution of 1-1750 strength. This extreme dilution of the solution prevents the risk of any danger from the subsequent action of the coating.

The plates themselves are very sensitive—when freshly prepared, one-third as sensitive as wet plates—and therefore to be preferred to the otherwise very excellent Fothergill films, which require ten or twenty times the exposure of wet plates.

The limited keeping qualities of morphine plates should be no hindrance to their employment for astronomical purposes, as it is very easy to prepare a hundred of them one or two days before they are required.



There is, however, another circumstance of importance, which I ought to mention in connection with morphine plates. I have found that when exposed to the spectrum they are much more sensitive to the green and yellow rays than wet plates or dry films of other kinds. Now, Dr. H. C. Vogel has proved that the circumference of the sun is much less chemically active than the middle, and for this reason the former appears usually somewhat under-exposed, and in short exposures to such a degree that one can scarcely make out the outline of the body. According to photo-spectroscopic results, it may be anticipated that morphine plates will give a much better defined outline, and for this reason will allow of finer measurements being taken. Up to the present moment I have been enabled only to make a couple of experiments with morphine plates in murky weather; but, nevertheless, the limbs of the sun came out most satisfactorily upon my plates.

### Correspondence.

#### STRONG DEVELOPER AND THE ALBUMEN AND BEER PROCESS.

SIR,—I notice Capt. Abney's letter on his albumen and beer process.

Clearly, working with the albumen so as to allow of my strong developer being used is a most important improvement, and one which will much conduce to the success of Capt. Abney's process.

If the albumen is left on, I think he will find that by first applying the pyrogallie acid alone, and then adding the ammonia, the strong development becomes manageable; at least, I do not myself find difficulty in working thus when experimenting.

II. STUART WORTLEY.

#### BLISTERS IN ALBUMENIZED PAPER.

DEAR SIR,—Having received nearly the whole of my photographic knowledge from the PHOTOGRAPHIC NEWS, I beg to offer a brief item for the benefit of others. I observe in the News for June 12th that the Edinburgh Photographic Society discuss from their question box, the enquiry, "What is most likely the cause of, and best remedy for, the blistering of albumenized prints?" Now, I have been troubled but very little with blisters, until the beginning of last winter, when, on taking a batch of pictures out of the washing pan, I found them covered with blisters so thick that they would not even come to a smooth surface with very heavy rolling. It completely puzzled me; and thinking the matter over, I concluded it was owing to the cold weather. With my next batch of prints, therefore, I made the hyposulphite of soda warm, or even hot. It is important not to put the prints into cold water after this, but into warm, nearly the same heat as the soda; let that get quite cold before you add any cold water: if you add cold water you force blisters immediately. I worked the plan all the winter, and quite got rid of blisters. I occasionally go back to the cold hypo.: it blisters immediately. Always make the hyposulphite warm; after mixing, standing in the sun will do in the summer. If the hyposulphite has been made a few days, and gets the same degree of heat as the printing room, it will have the same effect. The paper I used was Thomas's Rive.—Yours, &c.,

RICHARD HUCK.

### Talk in the Studio.

COAGULATION OF ALBUMEN.—A recent communication to the Academy of Sciences at Paris states that the tendency in albumen and serum to coagulate depends on the presence of carbonic acid in the substances, and that if it be completely removed neither will coagulate, even at the temperature of boiling water; whilst the restoration of the carbonic acid revives the capacity of coagulation.

THE ANTHONY PRIZES.—We recently announced decisions in regard to a series of prizes for photographs offered by Messrs. Anthony, of New York. We have just been favoured by Mr. Badeau, a member of the firm, with some examples of the prize prints. Two of these are half-plate portraits of children by Gutekunst, of Philadelphia, both very fine; but one, especially, is exceedingly beautiful—a charming portrait of a charmingly pretty little girl—"Little Adele." We do not

exaggerate when we say that as a picture it might have been regarded as a *chef d'œuvre* by Sir Joshua. A whole-plate portrait of a lady, by Barhydt, of Rochester (U.S.), is a piece of very fine work, doing full justice to a model of unusually fine features and winning expression.

### To Correspondents.

DARTMOOR.—As we mentioned in our article referring to the matter, the metallic precipitating bars were announced by a dealer in photographic materials in America, not in this country. You can easily obtain something which will answer the same purpose of any worker in zinc.

SPOTTING.—You will find various articles devoted to spotting and retouching in back volumes of the NEWS and back YEAR-BOOKS. We cannot devote much space to detailed instruction for carrying out any branch of work in this column, but as you are a constant reader of the NEWS you will have no difficulty, we presume, in referring to our volume for 1871, where you will find many articles on the subject. The preparation for spotting out negatives which we noticed in our last will help you much. You simply require the preparation in question, a fine pointed and not too long haired sable pencil, and a steady hand. The great point is to avoid, in filling up pinholes, &c., spreading the colour you apply so as to make a large, white spot, requiring much retouching in the print. In retouching the print, mix water colours to match the tone of the photograph; warm sepia, Indian ink, and purple madder will give a good tint for most photographs, and sometimes a little crimson lake may be added. You may mix with the tints a little fresh gum, or a little albumen. Work with as dry a brush as you can conveniently.

C. A. B.—There may be many causes for your negatives being thin, and intensifying imperfectly. One of the most common causes is the use of a thin, new collodion. The addition of a little collodion which is older and has more body would help you in such case. It may be that your silver bath is getting weak. It sometimes happens that in pouring on the developer the free silver on the plate is driven off and spilt, and a thin negative generally results. After developing, wash well, then treat the plate with a solution consisting of one grain of iodine, two grains of iodide of potassium, and an ounce of water; wash, and apply the pyro and silver, or iron and silver developer. You will rarely, in such case, have much difficulty in securing intensity. 2. The brass work to which you refer is probably lacquered, and has had the lacquer removed by wear. Wash with soap and water, and relacquer with a spirit varnish in which a little dragon's blood or gamboge is dissolved.

SILVERTIDE.—Have you any reason to believe that the trough contains any silver? It will not necessarily do so. If there be any, the simple plan will be to scrape it away from the surface, recovering the silver by adding hydrochloric acid.

TRY-AGAIN.—The process of applying the plumbago in powder is a very slow one, and requires patience; gently and steadily applying a little at a time with a soft touch of the brush, which should be applied with a circular motion. By continued application, you may impart a thick deposit, producing a dense negative. You can either transfer to leather collodion, of which you may have a film on both sides of the gelatine negative, or you may transfer to glass.

B. L. D.—For landscape work pure and simple your single lens will answer every purpose, and for the interior we should use a portrait lens, stopped down no more than is absolutely necessary to secure definition. Use wet collodion for the latter if you can, but avoid the repellent collodion, which gives matt stains for a purpose in which a somewhat extended exposure is unavoidable. We should use an ordinary iron developer.

G. F. T.—The addition of alcohol to the printing bath at the rate of three ounces to every pint of water will aid materially in checking the tendency to discolouration in the silver bath. Making the silver bath of hard water instead of distilled water has been found a preventive of discolouration.

E. M.—The collodion is in fault. The reticulation is due to the use of too weak solvents in making the collodion. But for this, your attempt to manufacture collodion is apparently successful. It is probable that you have used ordinary rectified spirits of wine, which is not sufficiently free from water to be used in equal parts with ether in making collodion. Ordinary methylated spirit is generally about 63 over proof, and spirits of wine about 50 over proof.

COMMON SENSE.—You misunderstand the matter entirely. It has no reference to England whatever, but to the far West of America, and is an example of the idea of fun prevailing there.

D. F.—The example of double printing with two distinct tones is, we have no doubt, the result of printing one portion in the sun and the other portion in the shade. There is generally a tendency in full sunshine printing to give warmer and more foxy tones than in diffused light. We some years ago fully described a series of experiments we made in this direction.

Several Correspondents in our next.



## The Photographic News, July 3, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### PURE PYROXILIN—THE PARIS PHOTOGRAPHIC EXHIBITION— UNION IS STRENGTH.

*Pure Pyroxilin.*—The employment of celloidin gun-cotton—or, in other words, pyroxilin which has been dissolved in ether and alcohol, and precipitated by the addition of water—has found little favour in this country, although some of the principal studios in Berlin and Vienna employ it. There can be no doubt that a product such as this, provided it always gave a stable film upon the glass, has very much to recommend it, for it may be considered entirely free from matter likely to act injuriously upon the silver bath or upon the image. Chemists will tell you that this is about the only way in which chemically pure, soluble pyroxilin can be produced, for when the flocculent masses of gun-cotton are precipitated by the addition of water to collodion, the gummy matter, mineral impurities, &c., which may chance to exist in the solution, are left behind. In pursuing a chemical investigation, a chemist would, in all probability, pursue this course to obtain the pyroxilin perfectly pure. The drawback to this plan of purifying is, of course, the increase of cost that would be naturally involved, for although the recovery of the alcohol and ether is possible, still it is always a costly operation. But there is a plan we might point out by which the purified product could be obtained at comparatively little cost, by utilizing, namely, what is comparatively a waste product now-a-days. Large quantities of gun-cotton are about to be made in this country for military purposes, and its manufacture is also shortly to commence on a large scale in Prussia. Our war authorities, however, only want the most explosive form of pyroxilin, which is not soluble, and one of the tests to which it is subjected, before the product is accepted by Government, is its examination for soluble cotton; for if it should contain as much as fifteen per cent. of soluble pyroxilin, a supply would be rejected, and thrown back upon the contractor's hands. Now it would seem to us that although the quantities tested may be, from a military point of view, very small indeed, it would be quite the reverse from that of a photographer: and if in these waste solutions the pyroxilin were recovered as a precipitate, the same would furnish a most excellent material for collodion. When, therefore, the manufacture becomes more thoroughly developed in this country and in Germany, there ought to be no difficulty in supplying celloidin collodion at as reasonable a rate as the ordinary material, and in this way photographers would have one difficulty less to contend with. Indeed, it is not at all unlikely that the manufacture of gun-cotton for military purposes may be carried on as extensively as that of gunpowder, and in this case the photographer would reap a great advantage. The usual test for highly explosive pyroxilin is to wash fifty grains of it in about eight ounces of alcohol and ether, and this amount may contain, after the operation, from twelve to fourteen grains of gun-cotton. So dilute a solution need not be precipitated, but might be reduced to at least half its bulk before treatment. Besides the removal of foreign matter, this purification of the gun-cotton does away with every trace of acid.

*The Paris Photographic Exhibition.*—Honours have been falling thick upon the exhibitors at the Paris Photographic Exhibition this year, and we are told that nearly every British exhibitor has received either a medal or honourable mention. The names of the English medallists are: Mr. William Bedford (whose works are specially commended), Mr. William England, Mr. D. Hedges, Mr. Johnson, and Mr. Woodbury. Honourable mention has been awarded to Mr. Brownrigg, of Dublin, and Mr. Diston, of Leven. Altogether, however, there are only eighty-six exhibitors,

so the contingent from this country cannot be very large. Of these eighty-six, more than half—forty-five—have been awarded medals, while the other forty divide a score of honourable mentions among them, leaving but twenty out in the cold. The collection of pictures is said to be a very good one, as might well be the case with all these prizes. As the exhibition will remain open during the summer, and not close before September or October, some of our readers may get the chance of a look round before the end of the season. The last exhibition in Paris was held four years ago.

*Union is Strength.*—The premises of the Scientific Club have now been formally opened in Savile Row, in the vicinity of the popular Savile Club, which is, by the way, more scientific than anything else, for although artists and authors are to be found among its members, the great bulk are professors attached to the London colleges, medical men, &c. We are glad the Scientific Club is a success, for now that nearly five hundred members have joined, it may be considered so, because, by the combination of scientific men in this way, it will be more easy to make a forward movement at any time, and get themselves properly represented. Every day our learned bodies are acquiring more weight and influence, and the Government of to-day is bound to consider their interests. The mere fact that a man of high scientific attainment—Dr. Lyon Playfair—was among the Ministers of the Cabinet during the reign of the late Government, alone proves how great was the desire to have advice such as he could afford; and the rumour respecting the appointment of a Minister for Education is a step in the same direction. And if such advances are made without any combination among scientific men—for our different learned societies are, unfortunately, quite independent of one another—how much more could be effected by pressure exerted from a united body representing all branches of science! It is for this reason, especially, that we are glad to hear of the establishment of the Scientific Club, for it is a step in the right direction to bring scientific men together, to aid one another in progressing onward.

### ON COPYING AND ENLARGING.

BY R. J. CHUTE.

ONE of the first requirements for enlargements is a long box or camera, made in two or three sections that slide into each other, so that any desired distance may be readily had. For enlarging, a quarter or half size portrait tube, with central stops, is suitable. The front of the camera should be so constructed that tubes of two or three different sizes may be put on or taken off without delay. If a Daguerreotype be tarnished, it should be cleaned. This is done by holding the plate by the lower left hand corner in a pair of piers, and after washing under a gentle stream of clean water, flow with a weak solution of freshly-prepared cyanide, or a solution that has not been used for any other purpose; let it be on the plate a few moments, or till the tarnish is removed, then wash thoroughly, and warm over a gas flame or spirit lamp till with one good breath the surface can be blown dry without any stop. The full sunlight is best, and, for a Daguerreotype, should be reflected from a mirror about on a level with the camera. Should the Daguerreotype be rubbed or scratched, it may be better to copy in diffused light, placing it in such light and position as will show the marks the least. Ferrotypes and tintypes, if at all old, will need revarnishing, as it removes all little scratches in the varnish, gives brilliancy to the picture, and saves a great deal of after labour in the copy. Further than this, a ferrotype may be proceeded with the same as a Daguerreotype, with the exception that the former will require about fifty per cent. more exposure. In copying either of the styles just referred to a copy may be made in one-third the time or less, and be more bril-



liant and perfect, by using a condenser, like a burning glass, to concentrate the rays of sunlight on the picture being copied. It is not necessary to have a lens especially for the purpose, as the front lens of any large portrait combination answers very well.

In the absence of a reliable enlarging process for negatives on hand, make a good print, and, taking a clean plate of glass, plunge the picture and glass into a dish of water, and then bring them in contact with each other; then remove, and, if free from air-bubbles, place over the back of the print a piece of wetted blotting-paper. In this condition the picture may be copied in direct sunlight, or in the diffusion of a ground-glass skylight; in either case use the mirror to reflect the light as nearly as possible in the opposite direction from that in which the direct light falls. In this way a card-sized head may be enlarged to life-size with very little roughness from the texture of the paper. Photographs of any size, architectural drawings, manuscripts, maps, &c., may be copied successfully in the same way. A great advantage is gained in using a reflected light opposite the direct light.

For architectural drawings, models, &c., where correctness of line and form are required, a good copying or view lens is necessary.

In copying of any kind, a more perfect immobility is necessary than in making sittings; all jar or vibration should, therefore, be avoided. To succeed well in copying, it is of the first importance that all the arrangements should be made with care, leaving nothing to hap-hazard or luck. The copy is more than half made when, in a good light, all the preparations are made with a purpose to secure the best possible result. For copies requiring black and white, a thick collodion should be used, with a little less bromine.—*Mosaics.*

## A PHOTOGRAPHIC ALBUM.

BY E. LEGOUVE.\*

PHOTOGRAPHIC collections are now in vogue. They are found on almost every centre-table, and each one is both the portrait of those who are placed therein, and of the one who composed it. One of these albums which recently fell under my observation struck me by its peculiar character, and suggested to me the idea of addressing you for a moment concerning that marvellous discovery which pertains to art, science, history, and the family; which is intended as well for the most obscure beings as for the most illustrious; and which satisfies one of the most ardent desires of our mind, and also one of the most profound longings of our heart.

Madame de Staël died conversing. In vain, for several days, her relatives, seeing that the fatal end was near, wished to prevent visitors from approaching her bed of agony. "Let them enter! let them enter!" cried she, in a feverish voice; "I am athirst for the human face." This deep and almost terrible phrase expresses one of the most ardent passions of our day: we are all athirst for the human face. Stop at the printsellers: see what a crowd is found before the showcases containing photographic exhibitions, and observe what eager investigation. Let the picture exposed be that of a criminal, or of a man of genius, of an actress, or of a general, of a sovereign, or of a poet, there is the same eagerness to examine the brow, the eyes, the physiognomy. Is this pure curiosity, simple love of amusement, frivolous idleness? No! There is something else besides the desire of looking, in that insatiable ardor of looks; there is a deep and characteristic longing of modern intelligence. We are all athirst for the human face, because we are athirst for the human soul.

\* Our American contemporary, the *Photographic Times*, translates this charming article by Mons. Legouvé, of the French Academy, considering that there is too much suggestive excellence in it to be lost to photographers.

Our age, truly, is not one of imagination and poetry: reality alone interests it deeply. In science the time of systems is passed, the reign of direct experiments is come. In history we require absolute truth; we wish the historian to know and tell us about great men as much as their valets could. At the theatre the surest road to success is to relate at night to the public what it has seen and heard in the morning; it matters little that what it has seen may have been ugly, and what it has heard may have been painful; the public is satisfied if it be a reality, and the bitter pleasure of proving the existence of a vice or a foible is a consolation for seeing, and even for having it. To this may be attributed the immense success of Balzac. No writer has uncovered more human ugliness; none has probed the soul so deeply, often to bring forth only hideous monsters; and none has inspired so much sympathy and admiration. Is it not strange? The more he drives us to despair, the more we are drawn to him! Why? Because the more he afflicts us the more true we believe him to be; and because he thus satisfies the riling taste of our mind, and our most cherished pretension to show the bottom of things, and not to be dupes.

This double frame of mind explains our passion for the photographs of celebrated persons. We are not satisfied with knowing what they have done, we want to know what they are.

Now, who or what will give us this information? Is it their reputation? Fame has a hundred mouths only to lie in a hundred different ways. Is it their works as poets or painters? Artists show in their works only their best side; sometimes, even, they put the opposite of what they are. I have known a painter, celebrated by the fury of his battle pieces, who was prudence personified; he expended so much courage on his pictures that none remained for his private life. Finally, shall we judge men of action by their actions? Nothing is less certain. We are almost always worth a great deal more, or a great deal less, than what we do. A great many culprits are less criminal than their crimes; and there are very few heroes who are as heroic as their actions. Were we to penetrate to the inmost recesses of that heart which gave birth to any culpable or praiseworthy action, we should be amazed at the difference which exists between the deed and the doer, between the tree and its fruits. Surrounding circumstances, the moment, the secret motives, the inducements, play so great a part in our actions, that we ourselves can only be counted for one-half in their accomplishment; all of us have events as anonymous collaborators.

Now, in the acts of celebrated men, what is the exact part that belongs to them? What relation, what proportion, exists between what they have done and what they are? This is what we are so desirous of ascertaining, and what we seek to find in their portraits. We summon before us the human face as a last witness, a witness who does not tell all, but who tells what no other can; a witness for the prosecution and defence, who aggravates, attenuates, completes, or corrects, the other testimony; a witness furnished by the Creator Himself, and who, if consulted with circumspection, rarely lies and seldom deceives. As a general rule, men have the face they deserve to have. Now, that is what, henceforth, photography will give us; and that is what has been attempted, and partly realized, for the present time, in the album of which I have spoken.

He who has formed it, nevertheless, is neither a *savant*, nor an historian, nor a moralist; and his collection resembles in no manner a complete and methodical gallery of contemporaneous celebrities. Being a man of the world, a man of wit, a critical amateur of what is piquant in the actualities of life, he has endeavoured to express, by this collection of portraits, the face of the fleeting world in which we live.

To that end he has gathered from the Parisian *Flora*



(for it is essentially a Parisian album) a hundred—What? Celebrities? Oh, no! That word is too big for the purpose. Some of the persons who figure there will perhaps soon be simply distinguished characters; in a few months they may be merely notabilities; a little latter notoriety; and will end, I fear, by becoming unknown. No matter, it will only be the more curious, and the contrast more striking. In it a statesman faces a prima donna; a sovereign forms the companion picture to a tenor; a cabinet minister smiles at the one who is to succeed him; opposite to the noble front of an immortal poet shines the ephemeral beauty of a woman of fashion, and the evanescence of her reign of a day but adds to the charm of the collection; as we all know, falling stars are not the least attractive ones in the azure vault.

In running over these portraits a reflection came to my mind, and I said to myself: These persons are better likenesses of themselves than they imagine, for, without being aware of it, they have worked to make their own portraits—they have been at the same time models and painters. More than one, I am sure, on seating himself in the photographic chair, has taken his preferred pose, his favourite expression, that which depicts not what he is, but what he believes himself to be. Here is one, for example, who smiles with a cunning air; evidently he thinks himself witty. This other one, with his eyes raised to heaven and his dishevelled hair, belongs to the class of inspired poets! I would be much surprised if this person who looks at you full in the face with piercing eyes, as if he wished to transfix you, were not murmuring to himself, "What an eagle eye is mine!—nothing escapes me." Finally, as to this young legislator, who carries so proudly his seven hundred and fiftieth part of sovereignty, it is evident that when he once mounts the rostrum it is not easy to get him down; I am certain that, vain of his twenty-five years, he snubs his senior colleagues.

In a word, photography gives us at the same time the portrait of our persons and of our pretensions. The result is that I look upon it as being very healthy to have one's photograph taken from time to time. A good photograph is equivalent to an examination into one's conscience. Photography places under the eye more than one secret foible that you were loath to acknowledge, and brutally throws your age at your head. That man of fifty, of sixty, if you choose, if he be sincere, does not murmur to himself, when looking at his photograph: "Gracious heaven! how old I am! How! All these wrinkles are mine! What! This sad, worn, furrowed face belongs to the gentleman whom I shave every day! It is not to be believed!" One is stupefied, and this stupefaction is often increased in a very disagreeable manner when showing this photograph to some friends. One hears them exclaim: "Oh, how perfect! It is you! Now you have a portrait that looks just like you!" Thank you.

Ah! although we may believe ourselves to be sensible and philosophical, and despite our endeavours to pluck from our hearts all its illusions of vanity, as a good gardener tears up the evil weeds in his garden, we always have inside of us a portrait of ourselves much finer than the reality. Within us there is no register of our position, there is no baptismal record; the inner man is always young. Do we come across an interesting book, and feel the same enthusiasm that we felt at twenty-five; does a touching story bring tears to our eyes; does a beautiful face charm us as it did at twenty-five? Then we believe that we are only twenty-five. I am sure that when the old men of Troy, standing up before Helen, cried out, "How beautiful she is!" they forgot their age; they believed themselves to be young; they were so in reality inwardly. Yes, inwardly; but what of the outside?

Oh! be advised by me, all you, my contemporaries, my elders, and even my juniors; have your photographs taken. If you feel within you any awakening of vanity, any inclination to pretensions—pretensions to force, to

success, to grace, to health, have your photographs taken! Have your photographs taken! There are great preachers in the world, but none of them will repeat so plainly the *solve senescentem* of Horace; none of them will tell you so bluntly: "Look you, my good man, take your harness off, put water in your wine, give up all idea of being brilliant, content yourself with being good, useful, and humane." That belongs to all ages.

Old age has a beautiful part to play; it is not to counterfeit youth, it is to love it, and, in turn, to be esteemed by it. Old age may, perhaps, possess its charms; but they are charms that are serious, and, above all, disinterested. All young people are more or less usurers; their amiability, their elegance, even their joyfulness, always bear some resemblance to investments: they put out their smiles at interest. Let the old man do precisely the contrary; it is not forbidden him to endeavour to please others, but with the condition of never thinking of himself. Let him take for model the charming Ariste, in Molière's "School for Husbands," who is amiable, graceful, smiling, gallant even, and who is never ridiculous. Why? Because he gives everything, and asks for nothing.

This is what this photographic album said to me, and it is, certainly, very good advice; but it, also, requires advice. When we speak so plainly the truth to others, we must permit the truth to be spoken to us.

(To be continued.)

## Recent Patents.

### OBTAINING PHOTO-METRIC MEASUREMENTS.

BY F. J. BOLTON AND C. E. WEBBER.

THE specification runs as follows:—

"It is known that certain bodies, when exposed to light of greater or less intensity, become changed in their electrical conductivity or resistance.

"According to our present invention we apply this principle to the measurement of light and of the comparative transparency or density of translucent substances in the following manner:—We place the body to be acted on by the light in an electrical circuit, in which circuit there is also placed an electrometer or other known gauge of electrical resistance. On the body thus placed in the electrical circuit we direct the light, the value of which is to be measured; or we direct light passed through the substance whose transparency or density is to be tested, and we employ the measurement of altered conductivity or resistance of the body furnished by the electrometer or other gauge, as an index of the value or the light, or of the alteration to which light is subjected by the interposition of the more or less transparent or dense substance through which it is passed.

"It will be understood that by this method and apparatus photometric measurements may be obtained in terms of electrical measurement."

### IMPROVEMENTS IN PHOTO-LITHOGRAPHY.

BY ALFRED SLATER.

THE following methods of producing an image on a lithographic stone received provisional protection only:—

"This invention relates to the art of reproducing copies of photographs in the printing press from an ordinary lithographic stone.

"The processes consist—

"First. From a photographic negative I obtain a picture in gelatine leaf or other substance by processes known; then I pass two inking rollers with lithographic printing inks of different densities over the leaf, and then I take or pull off from the leaf an impression or picture on lithographic transfer paper. I then transfer the impression from the transfer paper to a lithographic stone, from which impressions can be pulled as desired.

"Secondly. When the picture or impression is obtained in leaf I embed it into type or other similar metal by pressure as at present practised, thereby leaving a print. I then ink this print and pull off an impression on to lithographic transfer paper, and transfer



the same to a lithographic stone, from which impressions can be pulled as desired.

"Thirdly, I obtain an undeveloped picture on a film of gelatine mixed with alum or other similar substance, which, as already known, renders the film so that when exposed to the action of light through a photographic negative a picture is obtained, the picture being absorbent to the degree acted upon by the light, and the grounding non-absorbent; the former absorbent of greasy ink, and the latter non-absorbent of greasy ink, but absorbent of water. I ink this film with two rollers having inks of different density, and pull off an impression or picture on lithographic transfer paper, and then transfer the impression to a lithographic stone, from which impressions can be pulled as desired."

### WESTON'S BURNISHER FOR PHOTOGRAPHS.

THE following specification describes details of Weston's press, which produces a fine surface by burnishing, rather than merely pressing, the card. It is as follows:—

"The object of the said invention is the production of a machine which will give to photographs and other like articles a durable polished surface. This object is effected by the application of heat and friction to the article under pressure. I use a bed piece, to which the apparatus is attached; the same is provided with means for securing it to a bench or table. I construct a convex bed of wood or other suitable material, upon which the photograph or other article is laid face upward. On the aforesaid bed plates are standards having slots at the top, through which passes a rod or bar; to this rod is securely attached the burnisher made of metal. I prefer to have it of cast iron, with its lower edge, which is turned up and concave to fit the convex bed case, hardened and highly polished. Set screws are fixed in the top of the said standards, and by turning them down they press upon the aforesaid rod, and force the burnisher attached to it down upon the bed. I attach to the said rod a lever, by which a to-and-fro motion is given to the burnisher. This lever has its fulcrum in the bed piece. The burnisher is heated by a lamp. Five minutes are usually required to heat the burnisher sufficiently. The picture being placed upon the bed, face upward, the burnisher is forced down by the aforesaid screws, and by means of the lever is moved over it. One or two strokes will be usually enough to impart a brilliant finish.

"A like effect may be produced if the burnisher is stationary, and the picture moved over its face, the principle being the same in both arrangements. In the latter case the burnisher has a convex roll revolving upon a shaft in standards placed over it. The burnisher is horizontal, and the picture receives its pressure from a set screw placed under it. A lamp supplies heat, as before, and the picture being inserted between the roll and burnisher the former is revolved by the crank, and the picture receives its polish as it passes through the machine."

### PHOTO-MECHANICAL PRINTING.

BY CAPTAIN W. DE W. ABNEY, R.E.

THE following specification contains details of Captain Abney's patent improvement in photo-collography. It is as follows:—

"My invention consists of an application of the well known fact that a solution of gelatine or other gelatinous substance when mixed with a suitable proportion of an alkaline bichromate and dried is rendered insoluble in water by exposure to light. Also, further, on the fact that gelatine treated in this manner will take a greasy ink even after being soaked in or brought in contact with water in proportion to the degree in which it has been rendered insoluble in or repellent of water by exposure to light.

"In order to carry out my invention I take a sheet of paper of any suitable size, and I float it for from one to three minutes on a warm solution of gelatine and bichromate of potash in water, the gelatine being swelled and dissolved by the aid of heat in the usual way. The proportions of these ingredients vary according to temperature and the subject that is to be copied, but the formula which I prefer to use is as follows:—

Gelatine ... ..	3 ounces
Bichromate of potash ... ..	1½ "
Water ... ..	50 "

"I then hang up the sheet of paper so coated to dry, and when dried I repeat the operation and hang it up to dry again by the reverse end. I sometimes treat the paper as before described with

a solution of gelatine without the addition of bichromate of potash, making a stock of gelatinized paper which will keep indefinitely, and when required for use I float this prepared paper on a solution of bichromate of potash of about thirty-five grains of the salt to the ounce of water, and dry. Sometimes I give the paper a preliminary washing of gelatine to which has been added a sufficient quantity of alum or other substance which will render gelatine insoluble; or I coat it as first described, and I then render it insoluble by the action of light, and then coat it again as before described. The object of this is to get a fine surface on which the final sensitive gelatine film shall rest.

"The methods described are well-known and practised in photolithography.

"I next take a negative of a true subject in the ordinary manner, and place it, in the method well understood and practised, in contact with the prepared paper, which is then exposed to the action of light. Where the light acts through the transparent parts of the negative there the gelatine, as before stated, becomes insoluble, and it also becomes discoloured to a brown tint. When I judge the picture to be sufficiently printed I take the paper upon which a picture has thus been printed, and I place it in a dish of cold water, or else in cold water to which a sufficient proportion of alum or any salt which renders gelatine insoluble has been added. I then wash out a good deal of the bichromate of potash which has remained unaltered, a portion of which, however, I prefer to leave in the gelatine. When the paper on which the picture has been printed is thoroughly soaked I take it and place it on a flat support of zinc, pewter, glass, or other suitable material, and I get rid of all superfluous moisture, either by placing it in a press, drying it with blotting paper, or leaving the moisture partially to evaporate by any other convenient means. I then take a soft roller, such as that used in producing the pictures known as heliotypes, and described in the specifications of the letters patent granted to Ernest Edwards, dated December 8th, 1869, and numbered 3513, and dated September 15th, 1870, and numbered 2485, and dated October 20th, 1871, and numbered 2799, and dated January 9th, 1872, and numbered 73, and having coated the roller with transfer ink of the kind ordinarily used by lithographers, or with any other suitable greasy ink, I roll it over the surface of the picture. Upon the parts of the picture where the light has acted, and which are consequently repellent of water, the ink will adhere, whilst upon those portions which have been unacted upon, or only faintly acted upon, by light, the ink will not adhere. If the negative be thin (as understood by photographers), and thus cause what should be unaltered gelatine to become slightly altered by the light, a stiff or thick ink on the roller will prevent these portions being covered by the ink, as it will only permanently adhere to those parts strongly acted upon by the light, as explained in the specification of the letters patent of Ernest Edwards, dated December 8th, 1869, and numbered 3513, already referred to. When it is judged that sufficient ink has adhered to the picture I remove it, and if thought advisable I place it for a short time in alum and water. This is not necessary, but may be advisable in certain cases. I then dry the inked up picture thus produced, and if the bichromate of potash has not at all been washed out in the previous washing described, I prefer that actinic light should be allowed to fall on the surface of the print to harden it, and thus prevent the film adhering to the stone or metal plate, to which, after re-damping, it is to be transferred for the purpose of printing from in the printing press. Instead of paper as a support for the gelatine film I sometimes use fine woven calico, linen, india-rubber sheeting, silk, or other suitable analogous material. There is now a complete picture in greasy ink ready to be transferred in the ordinary manner to stone or metal plates for the purpose of printing from.

"I claim as a novelty the method of 'inking in' such a transfer on gelatine or other colloid body for the purpose of being transferred to stone or metal plates, substantially as described, as being different in all essentials to any process yet published.

"If a 'half tone' negative be employed, the paper may be used for obtaining pictures in ink as by the heliotype process already referred to, or by any other of the methods well understood and practised. In such a case I prefer to coat the back as well as the front of the paper with gelatine to cause it to adhere to the support. The front of the paper which is to be in contact with the negative should have a thicker coat than if the picture is to be used for a transfer as above described.

"Another modification of my invention which I sometimes employ is as follows:—I coat a sheet of paper or other suitable material with a solution of gelatine in the manner hereinbefore described, but I omit from such solution of gelatine the bichro-



mate salt, and I only add a small proportion of alum or other substance which has a tendency to harden the gelatine or render it insoluble. Upon the sheet thus prepared I write or form designs by means of any kind of pen or other suitable instrument with an ink composed of a gelatinous solution, or solution of gum, to which has been added a proportion of a suitable bichromate sufficient to render such ink sensitive to light when dry in the manner hereinbefore described. I sometimes also add to the ink thus prepared a quantity (in any convenient proportion) of aniline dye, preferably of a mauve colour. When the writing or designs thus formed have become dry, and have been rendered non-absorbent of water by the action of light, I damp the sheet, and then ink it up by means of a roller in the manner already described, and the writing or designs can then be transferred to stone or to a metal plate for the purpose of printing from in a printing press."

### DURABLE SENSITIVE PAPER.

BY DR. J. SCINAUSS.\*

It has long been the desire of the manufacturer of photographic papers to produce a durable silver paper which might be especially useful to amateurs. Professional photographers are less interested in the matter, for they are, as a rule, contented if their paper lasts them a few days without turning yellow. Only at rare intervals does the wish to possess sensitive paper capable of lasting for months spring up in their breasts. A long row of recipes have been published during the last few years for preparing a material of this kind. Precautionary measures, such as the employment of an air and light-proof box, provided with chloride of calcium, have been suggested; a carbonate of silver paper has come to us from Paris; and, finally, there is the method before us of washing and fuming albumized paper, as suggested by M. Baden, which is found to be of a most practical character.

Recently, I received from a friend in England a durable sensitive paper which put into the shade the qualities of other papers of this kind, for it was very sensitive, and, after a long period of keeping, scarcely altered in appearance; after printing and fixing, the whites of the picture were faultless, and the prints could be toned easily and beautifully in any of the ordinary gold baths. It was free from blemishes and blisters, and, in a word, behaved like a sample of the best albuminized paper. Unfortunately, I received but a third of a sheet for experiment, and the preparation collected from the surface of it would scarcely have covered the tip of a penknife. This, owing to the different salts and organic substances added, could not be satisfactorily analysed, despite the great care taken, so that I must await a further supply before I can undertake any other examination. In investigations such as these, experiments by comparison are unreliable, and sometimes only prove the truth of one's analysis from the fact that in the latter, the presence or absence of certain constituents can be proved, which are present in appreciable quantities, but it is not shown in what manner, or in what order, the constituents have been applied to the paper—a matter, of course, of the utmost importance in practice. I may be permitted, however, to give, at any rate, the nature of my experiments, and communicate some of the results about which there is no doubt.

Upon putting the sensitive paper into water, it appears, especially from the back, to become very transparent, as if it had been worked in an unsized state. The reaction of the wash water is slightly acid, and betrays no coagulation on boiling to precipitate the soluble albumen. To precipitate the soluble silver salt, it was treated with hydrochloric acid, and the slight amount of chloride of silver was separated by filtration, and treated with sulphuretted-hydrogen water. No precipitate was apparent. Supersaturated with ammonia, the solution, on treatment with sulphide of ammonium, gave a slight iron reaction, and

some phosphate of lime, presumably from the albumen, as the solution was acid. Carbonate of ammonia added to the filtrate gave no remarkable reaction. After drying of a portion which had been treated with hydrochloric acid, calcining the residue gave a notable reaction upon soda by antimonious potash, and on drying, crystals and cubes of chloride of sodium appeared. A portion of the dried, but not calcined, residue, treated with caustic potash, and warmed, gave strong vapours with hydrochloric acid—ammonia, which could also be sublimed as chloride of ammonium.

The testing for acids was the most important, as also the most difficult, as it was here a question principally of organic, and not volatile acids, whose action is not very marked, especially when several of them are present. As it is well known that an addition of citric acid to the albumen silver bath preserves the paper, and as the preliminary experiment proved the existence of an acid body, I directed my attention more especially to the detection of citric and similar acids. Some time ago the employment of different organic acid silver salts was employed with advantage for paper printing, besides the citric acid, tartaric, and formic acids giving sensitiveness and beautiful tones. To preserve these qualities, together with those possessed by ordinary chloride of silver paper, it is only necessary to add a little citrate or tartrate of soda to the chloride of sodium or ammonium used in albuminizing the paper. Citric acid alone is, as a matter of course, powerless to precipitate nitrate of silver, but there is necessary, besides, an alkali, which, in the double decomposition, attaches itself to the nitric acid. But both in acids and ammonia, citrate of silver is soluble, a fact deserving of notice.

To return to the testing of the paper in question. I thought over all sorts of ways for the purpose of securing all the substances, and even the unknown ones, in solution. In the first place, I digested the paper with dilute soda solution, in this way separating the silver in the form of oxide, and dissolving the albumen as well as most of the other substances. To separate the albumen, the dilute solution was treated with dilute nitric acid, warmed and filtered, a portion of the precipitate being treated with nitrate of baryta, which proved the existence of sulphuric acid, although not as an essential constituent. The remainder of the fluid was neutralized and supersaturated with lime water. Some flocculent matter which here showed itself appeared to demonstrate the presence of tartaric acid; the direct proof of the existence of this body, however, by means of acetate of potash, was not decisive, for the small amount of precipitate was always flocculent and not crystalline, as is the case with tartrate. After filtering and boiling the solution, supersaturated with CaO, a precipitate was formed, which might be looked upon as citrate of lime. The original paper, as also the residue of the dried extracts, blackens easily when warmed with sulphuric acid, a fact which seems to tell of the existence of citric and tartaric acids.

The testing for volatile organic acids was, by reason of the great excess of nitrate of silver or nitric acid present, very difficult. The testing for saccharine, and other similar neutral organic bodies, was also uncertain, as by the Trommer method every trace of iron must first be removed.

The following substances were proved to be present in the paper:—Albumen, chloride of silver, nitrate of silver, soda, ammonia (most likely from the salts in the albumen), nitric acid, citric acid and traces of sulphuric acid, phosphate of lime, and oxide of iron.

As above stated, the citric acid may be added—if there is a sodium compound—to the albumen of the paper, or to the silver bath, or employed in a special bath before or after sensitizing. We should think that the paper would be more durable if the acid were added in the last named manner.

\* *Photographisches Archiv.*



# The Photographic News.

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## THE PHOTOGRAPHIC SOCIETY.

THE new laws, a draft of which was sent to each member, to the general purport of which we referred in our last, have now been accepted as the code of regulations for the government of the Photographic Society, which, in the new laws, is styled the Photographic Society of Great Britain, instead of the Photographic Society of London, as heretofore. It is, beyond a question, matter for grave regret that the meeting at which the draft was accepted, and acquired the force of law, was not more numerously attended; but it is foolish to refer the sparse attendance to remote, improbable, and inoperative causes, when a very simple and manifest cause is at hand. The members generally are sick and weary of discussion on points of government, in which they feel little interest, and which in no wise affect the actual business and influence of the society. Under the old somewhat clumsy and imperfect code of laws, the society had passed through almost every phase of history: the early success which induced premature extravagance, followed by failing success and straitened means; then the energetic action which breasted the difficulties of the position, and recovered a position of more than solvency and increased usefulness. And, so far as it is possible to ascertain, neither the failure, nor the recovery from the failure, were in any degree attributable to the laws. Nevertheless, the laws were open to amendment: the revision has received careful attention, and they are accepted by a special meeting consisting of less than a score of persons. The council, who, whether new or old, by the late disturbances have been kept at thankless work beyond all reason, were in attendance to the number of thirteen or fourteen, and found assembled for the business of the special meeting four persons! One gentleman found in this circumstance a ground for blaming the acting honorary secretary for not having sent out special post cards, calling members to the meeting, the announcement in the *Journal* of the society, which constitutes its special organ, being deemed insufficient, because many of the members, it was said, never open it! Apart from the culpable indifference which such a statement charged, Mr. Hooper's answer was completely to the purpose: the announcement of the meeting had been made not simply in the society's *Journal* or "*Transactions*," but in both the independent journals, one or other of which was read by every photographer. Mr. Blanchard, with a happy spirit of optimism, concluded that the absence of members generally was simply an indication of complete confidence in the executive. Possibly this is partly true; and to such confidence on the one hand, and to weariness of the subject on the

other, the sparse attendance was due. At any rate, the chairman, as in duty bound, proceeded with the business, and Mr. Bird, shrewdly pointing out the fact that the whole code would be open to challenge at the annual meeting next February, if any one felt interested to discuss the question in detail, moved the acceptance of the proposed laws *en masse*, a proposition which was adopted. If any improvements worth discussing are discovered by any member, he will be at full liberty to bring the subject before the annual meeting, provided he give a month's notice of his intention to re-open the subject. Till then, at least, it is to be hoped that the society will enjoy some respite from worrying squabbles. One gentleman, it is true, who has been associated with the malcontents, hinted the probability of further agitation, and by his remark of uncertain application, to the effect that "the same spirit was at work," drew from the chairman the quietly quaint reply, "So it seems." We will hope, however, that the genial summer influences, with the perfect rest which is often one of the most potent remedial agents in case of constitutional disturbance, will remove inflammation, and restore strength and tone to the society.

The society has other and more important business. Not least amongst the good works it has for some time effected has been the holding of an annual exhibition, which has done more to promote the production of good work, and stimulate advancement generally, than any other agency we know. The prospects of the present year's exhibition have been seriously perilled by the waste of time in petty agitation. But the council have resolved to make an effort to hold an exhibition and secure success. The old traditions of hard work still prevail in the council, and a committee has undertaken the task of making all preparations for the exhibition, and duly advertising members of all details. To secure a good exhibition will do more for photography than to lead a hundred emeutes in the society, with or without reason; and we hope that, though somewhat late, contributors will, by additional effort, prevent the recent time-wasting agitation from injuring the exhibition. More effort will probably be necessary, but we hope the effort will be made. As no medal will this year be given, every effort must bear the credit of a labour of love.

## WASHING PRINTS.

WE have been, during the last few months, several times personally consulted by photographers in large practice as to the probable cause of early fading in their prints, and have almost invariably found, in course of conversation as to the modes of working adopted, that they depended for washing chiefly on long soaking. "It cannot be imperfect washing," is commonly remarked, "for the prints remain in running water all night." Waiving, for the present, consideration of all other causes of fading, we think it important again to call attention to the fact that merely washing in running water is by no means an efficient method of removing hyposulphite, and that long soaking is often, in itself, absolutely injurious, initiating a decomposition in the sizing of the paper which must finally issue in the destruction of the print. As regards the time of soaking, four hours should always be ample. It is rather on the mode of applying the water, than in the time of soaking, that efficient washing depends. Frequent changes of water, and perfect draining between each, will more effectually remove the hyposulphite than much soaking. The use, if possible, of the sponge or squeegee between changes of water, is most desirable. Placing the prints in a pile, and subjecting them to severe pressure once or twice between changes of water, is one of the most efficient plans of all. The use of a *douche* playing upon the prints—a plan adopted by Herr Albert, of Munich—is very efficient. Referring to this plan, which has been adopted by Mr. Kurtz, his mode of applying it was recently described



at the Germau Photographic Association in New York. The plan is as follows:—

"After fixing, the prints are put in a flat trough, the bottom of which consists of grooved plate-glass, and is in an inclined position to allow the water to run off; above this trough are several douches, connected by hose with a water-pipe running along the ceiling. To prevent the prints from being carried away from under the douches by the force of the water, they are put in half cylinders of glass, about twenty inches in diameter for large prints, and glass rods for smaller ones. When placed on top of these they will not move. After being washed on both sides for about five minutes, the silver test for hypo, as lately published, fails to show any trace of it. Generally, after thus washed, the prints are thrown into a tank with running water till the whole lot is got through with."

It will be seen that in all these cases the principle of using either friction or pressure to drive off the clinging hyposulphite is adopted as of vital importance.

#### DR. VOGEL'S DISCOVERY REGARDING THE NON-ACTINIC RAYS.

On another page we print a brief communication from Dr. Vogel in reply to some of the criticisms upon his alleged discovery of a method of actinizing non-actinic rays, in which, as it appears to us, his arguments are most cogent and will require well considering by those who have concluded that the mistakes, which it is manifest exist somewhere, are accredited entirely to Dr. Vogel. The objections to his announced discovery have been of three kinds. First, it has been urged that the principle which he affirms he has discovered, is improbable *a priori*. To that it is unnecessary to affirm that ninety per cent. of the greatest discoveries made appear improbable, and in many cases impossible, until the discovery is made. Next, it is affirmed that those who have followed his experiments have not met with similar results. To this it is necessary to reply that the argument is at best but of a negative character. Failure in securing results with a perfect method is not uncommon; but it is just as likely that it is due to some imperfection or error in the conditions under which the experiment is verified, as that the original worker misunderstood or misstated his work and its results. This is rendered more probable by the fact that Dr. Vogel has found similar results in over two hundred trials, whilst in many instances those of his critics have not exceeded a dozen. That the conditions may easily be missed is illustrated by the fact that in the plates sent to us by Dr. Vogel, in illustration of his position, we find that a strongly stained film gives barely the trace of an image, whilst, with varied degrees of dilution, as described in his article we now publish, we obtain more and more perfect results, the best giving an unquestionable extension of the ordinary photographic spectrum. Finally, in Dr. Van Monckhoven's courteous paper a suggestion as to the cause of Dr. Vogel's mistake, as it is adjudged, is given. Dr. Vogel has worked, it is assumed, with too wide a slit in his spectroscope for precise definition of the spectral lines, and Dr. Van Monckhoven suggests that the alleged extension of the spectrum is due to reflection or diffusion of the light by the imperfection of the prism employed in forming the spectrum. To this Dr. Vogel very naturally objects that if his results were due to such a cause, they would be equally produced upon any sensitive plate, whilst his extended spectrum is only obtained upon the plates suffused with colour as he has described.

As we have said, the plates forwarded to us bear out the assertions of the author of the discovery. A narrower slit on the spectroscope would, undoubtedly, have given finer definition of the lines in the spectrum, and we hope to hear of a repetition of the experiments under those pre-

cise conditions which Dr. Monckhoven suggests. In the meantime we shall have pleasure in showing the plates to any one interested in the question. If further experience verify Dr. Vogel's discovery, it is a question of much wider interest than is involved in its relation to spectrum photography: it comprehends, in fact, the possibility of a practical subjugation of all the disabilities in relation to colour which have hitherto limited and crippled the operations of the photographer.

#### THE PARIS PHOTOGRAPHIC EXHIBITION.

The following awards have been made by the jury:—

*Grand Silver Medal*.—M. Rousselon, Paris.

*Medals* (first section).—W. Bedford, A. Braun, F. Luckhardt, Lumière, J. J. Rodrigues, Rommler et Jonas, Rutherford, Thiel ainé et Cie, Victoire.

*Medals* (second section).—E. Baldus, Barkanoff, Bingham (late Ferrier, Lecadre, et Cie), K. Brandel, Chambay, Derogy, W. England, Ermakow, G. Fortier, Gertinger, Geynet et Alker, Jules Girard, Gougenheim et Forest, D. Hedges, Johnson, C. Koller, Knebel, Lachenal, Favre et Cie, Lafon, Lefinan et Lourdel, V. Lévy et Cie, A. Liébert, Maes, A. Magny, Mathieu-Déroche, Quetier et Cie, Achille Quinet, Ravaisson, A. Reds, C. Relvas, C. Reutlinger, Rottmayer, Comte de Roydeville, L. Vidal, Waléry, Woodbury.

*Honourable Mentions*.—Benoist, Brignoli, Brownrigg, Cadot et Delaunay, H. Denier, Diston, Fleury-Hermagis, H. Günzel, Ch. Goudy, Hainque de Saint-Senoeh, Hermann, L. Hervé et Ch. Perier, Jacobi, C. Knudsen, Lambert et Cie, Mage, Mayssl, Mdle. R. Mezzara, S. Pector, Pinel-Pécharrière frères, Piquée, R. Rive, M. Rupprecht, Schultz, Strumper et Cie. Szacinski, J. Ungar, G. Wolf et Cie.

#### A NEW PHOTO-ENGRAVING PROCESS.

At the last sitting of the Academy of Sciences in Paris, some photo-engravings were submitted for inspection, produced from copper-plates by means of a *Daguerreotype* impression. The prints are said to be of a favourable nature, and although wanting in some respects, they prove that the method is one worthy of further attention.

M. Bouquet de la Grye is the inventor of this method, and the same may be thus briefly summarised:—

1. A copper plate is covered with a thin film of silver, which naturally is very adherent, and the silver surface is coated with a coloured varnish.
2. A design or drawing of any kind is traced upon the varnish with a fine hard point, exactly in the same way as a diamond is employed for engraving upon stone.
3. The design thus produced—where the varnish has been removed, and the metal laid bare—is etched by means of perchloride of iron.

Instead of tracing with a point as above, however, upon the varnished surface, a *Daguerreotype* image may be produced upon the silver direct, and this is afterwards treated in the same way. The *Daguerreotype* must, however, be the representation of a design, or sketch, in black and white—that is to say, with certain definite lines—otherwise a clear etching cannot be obtained. By employing photography in this connection, it is possible, of course, to produce an enlargement or diminution of any design one may possess.

The plate, having been etched, and treated with acid to render the lines clear, is worked in exactly the same manner as an ordinary copper plate engraving, and printed in the usual press. The silver surface upon the copper contributes to the sharpness of the lines, and in this way a much clearer result is produced than is the case when an ordinary copper plate is employed.



## SENSITIZED ALBUMENIZED PAPER.

At the last meeting of the Photographic Section of the American Institute the president, Mr. Newton, gave some details of his experience in preparing permanent sensitive paper. He said:—

"The preparation of a sensitized albumen paper as a commercial article has not been successful. It has been either too expensive to meet the popular demand, or deficient in keeping quality. There are several ways by which paper can be prepared so that it will keep indefinitely; but, as a rule, it is exceedingly difficult, if not impossible, to make a print on such paper that would not ruin the reputation of any photographer, especially after it is a week old. Some time since, in experimenting in this direction, I found that by floating the albumen paper back down for one or two minutes on a solution of hydrochloric acid—one ounce of acid to forty ounces of water—and drying, it would render it capable of keeping perfectly for ten or twelve days after sensitizing. Not only this, but the prints were remarkably fine, made on paper thus prepared; and, also, those made after ten days' keeping were equal to those printed immediately after sensitizing. Paper so prepared should not be fumed until required for use. After the paper has been removed from the acid solution and dried, it would be well to pack it away under a light pressure, placing the albumen surfaces together, so that when required for use it will be in proper condition to put upon the sensitizing bath. As it is a great convenience for photographers to be able to keep paper for several days after sensitizing without its deteriorating, I would suggest that some of our many manufacturers of albumen paper prepare some of it in this way, as I am sure photographers would willingly pay the extra expense."

"The President exhibited some prints made on paper preserved in this way after having been kept for ten days after sensitizing, which were very fine, and equal to those made on paper sensitized that morning. The silver solution was from thirty to thirty-five grains. The President added: 'In the toning of these prints I used a little tartrate of antimony, and it worked very well. In the first place the prints turned red, a very deep rich colour, and toned up from that. I have not experimented enough to give a reliable formula, but I would suggest half-an-ounce of tartrate of antimony, which is commercially known as tartar emetic, dissolved in sixteen ounces of water; for each grain of gold use half a dozen drops of that solution, and increase it until you get the desired effect.'"

## MODIFIED DRY PLATE PROCESS.

MR. NEWTON, at a recent meeting of the American Institute, described a dry process he had been trying. He said:—

"In experimenting with dry plates, I found a preservative solution as follows,—

Water	...	...	...	10 ounces
Sugar of milk	...	...	...	100 grains
Tannin	...	...	...	20 "
Pyrogallie acid	...	...	...	20 "
Laudanum	...	...	...	1 drachm,

made a very sensitive dry plate. I made some very fine negatives with thirty seconds' exposure. Working in that direction some five years ago, I used to make negatives in fifteen seconds. That was all the time used with my tea plate. But in my experiments at that time I kept no record of the methods I employed, and often found it difficult to recall my formula. In thinking it over, it occurred to me that, in those days, I always used a chloride in my bromo-iodized collodion—one grain of chloride of cadmium to the ounce. The addition of a chloride appears to make them capable of being developed with plain pyrogallie acid. I exposed plates prepared with such collodion five, fifteen, and thirty seconds, and in each instance

obtained good negatives. After exposure, wash the plate thoroughly, and flow with a solution of pyrogallie acid from one to four grains strong, according to time exposed. The image will immediately appear in outline and detail. When it is sufficiently out, add a small quantity of solution of citric acid to the pyro. solution, and flow off and on a few times; then add a few drops of a ten-grain silver solution, which will bring it up to the required density. The image brought out by the pyrogallie solution is very thin."

## RENDERING ACTINIC NON-ACTINIC RAYS.

BY DR. H. VOGEL.

In the PHOTOGRAPHIC NEWS of June 12th I find an editorial notice\* of a communication from Dr. Van Monckhoven,

\* The original paper of Dr. Monckhoven is not yet in my hand. who has repeated my experiments on the action of colours on the sensibility of bromide of silver. Dr. Van Monckhoven has not succeeded, and he ascribes my results, if I understand aright, to some optical failure of my spectroscope.

I know very well that in each spectroscope are visible secondary images of the spectrum, and I have observed them very often. Generally these secondary images are of feeble light and very different position from the direction of rays falling on the spectroscope. I have studied also the photographic action of this secondary spectrum, and have found it very weak. I could get only an impression of this feeble image on an ordinary silvered wet collodion plate.

It is easy to prove that the strong action I have observed in the yellow of the chief spectrum does not belong to the action of a secondary spectrum.

1. If, indeed, the secondary spectrum, or any optical failure of the instrument, had made the impression I ascribe to the yellow, this impression would have been visible, not only on the coralline coloured plate, but on any other sensitive plate; but I have tried very often one plate immediately after the other, pure bromide plates, red-coloured, and green-coloured plates—and in each case I observed the stronger action of the less refrangible rays in different spots of the spectrum, according to the place of the absorption bands of the admixed pigment.

2. If the action I ascribe to the yellow or red of the spectrum were caused by the blue rays of the secondary spectrum, or any optical failure of the instrument, I could never have obtained the Fraunhofer lines belonging to the yellow or the red. But I have got the Fraunhofer lines belonging to the portions of the spectrum mentioned, and that is the best proof of the action of yellow and red rays.

If I had made only some two, or perhaps twelve plates, there might be possibly an error; but I have made some two hundred plates under the utmost different conditions, and with the same results. I presume that Mr. Monckhoven has coloured his plates too strong. It is a very curious fact I shall explain in the next, that a strong coloured plate does not give the action mentioned.

Herewith I send a set of my original spectrum plates, taken on bromide coloured with naphthaline red.

On Plate 1 (strong coloured) is visible only a feeble action of the blue—nothing in yellow.

On Plate 2 (less coloured) is visible a strong action of the blue, but only a trace of action in the yellow.

On Plate 3 (more or less coloured) is a very remarkable action in the yellow.

On Plate 4 (pale coloured) the action of the yellow rays is nearly the same as the action of the blue ones.

I said, further, that aniline green coloured plates with a visible action on the line C (in the red). Further, a chloride of silver plate (a) coloured with naphthaline red, and with an action stronger in the yellow (line D) than in the indigo (line G). Such an action can never be effected by any secondary spectrum.

At last a Wortley plate, on which I have at first observed



the strange fact that under certain conditions bromide of silver may be more sensitive to a less refrangible colour (green) than to a more refrangible one (blue). Here can be no doubt that the stronger action in green is due to the green rays, and not to the blue rays of any secondary spectrum, for the lines of the green are easily visible.

It is a curious fact that I hear so much objection against my discovery from England, though English experimentalists have a very convenient way to test it. If Colonel Wortley still prepares his plates in the same way as a year ago, everybody can prove my assertions by exposing a Wortley plate to the spectrum. But I would request the use of a *true* spectrum, and not a so-called artificial one—that is, coloured glass strips, which can never give the action of a spectrum.

### Correspondence.

#### PHOTOGRAPHIC PRIZES.

DEAR SIR,—I cannot imagine anything more detrimental to the real progress of photography than the wholesale distribution of prizes mentioned, with apparent satisfaction, by M. Ernest Lacan in the *News* for June 12th. He says there: "The number of medals and honourable mentions awarded, which are nearly equal to the number of exhibitors, tends to confirm what I said in my last letter regarding the exceptional excellence of this exhibition." "If I do not err, every one of them (the English exhibitors) has received a medal or honourable mention." I find by his letter of June 26th that there were eighty-four exhibitors.

What value can the recipient of such a medal or honourable mention attach to his prize? It may be useful for advertising purposes, but it cannot possibly have any other value.

Photographers are constantly complaining that they are not, as a class, placed among "artists" in the estimation of the public. Can it be possible that the public would do anything but laugh at a set of men who accept, and pride themselves upon receiving, such valuable rewards of honour? Such a reckless distribution of prizes is simply ridiculous.

I hope for the honour of photography that the many recipients of these most valuable medals will put them on the fire, and not go about like the tailor in the fairy story, with the grandiloquent declaration on his shield, "I killed seven at a stroke."—I am, sir, yours truly, N.

#### SENSITIVE GELATINE PELLICLE.

SIR,—Will some of those gentlemen who have tried and succeeded with Mr. Kennett's gelatine pellicle be kind enough to give us their experiences—*i. e.*, the difficulties they have encountered, and how those difficulties have been surmounted? My own experience has been as follows:—

1. I have found the pellicle exceedingly sensitive—quite as much so as wet plates—and I believe that it has the power of rendering the deepest shades perfectly.

2. I have found considerable difficulty in intensifying the image, and I should like to know whether this is a defect in the process.

3. I have found that the films are *extremely* liable to stain—especially the nearer you approach the end of intensifying—and herein (the staining) lies, I should think, the greatest drawback to the process. Of course extreme care may obviate this; but the slightest fault may immediately destroy an otherwise first-rate negative.

4. There is a certain amount of difficulty in obtaining an even film to start with; but that is purely mechanical, and can be obviated.

5. I am of opinion that the process has promising qualities; but, as an old hand at dry plate processes and alkaline development, I am constrained to say that it is the most difficult to work that has ever come under my notice.

May I add, in conclusion, that Captain Abney's beer process is really first-rate—easy to work, very sensitive, and satisfactory in its results.—I am, sir, your obedient servant,  
A DRY PLATE.

[We know that Mr. Kennett is more concerned that his pellicle should be deserving of success than for mere success itself, and that he will not only be anxious to assist those who are working it through any difficulties, but will be glad that the question should be honestly discussed. We shall be glad, therefore, to receive brief, clear, and courteous statements of experience.—Ed.]

### Proceedings of Societies.

#### PHOTOGRAPHIC SOCIETY OF LONDON.

A SPECIAL meeting of this society was held on Tuesday evening, the 30th ultimo, in the Architectural Gallery, for the purpose of passing the new laws, a draft of which had been placed in the hands of each member. Mr. J. SPILLER, F.C.S., in the chair. Minutes of a previous meeting having been read and confirmed,

The CHAIRMAN said that the new draft of laws, to the preparation of which the council had given very careful attention, having been placed in the hands of all the members, it would not be necessary now to read them. He would simply place them before the meeting, and take a vote upon each, *seriatim*.

Mr. HUGHES said that as there were only three or four members present besides the council, it was practically a council meeting, and the passing of laws was too important a matter to be decided under such circumstances. No post-cards had been sent out with the announcement of the meeting; the intimation that such a meeting would be held being only given in the society's Journal, which few people opened, members probably did not know of the meeting. Besides, it was always difficult to get a good meeting together in June. He should propose that the consideration of the laws be postponed.

The CHAIRMAN said the meeting had been duly announced. The regular June meeting had been really one of the largest they had ever had, and he himself at that meeting had stated that the members would be shortly called together to consider and pass the laws, then nearly ready.

Mr. HENDERSON seconded the motion for postponement.

Mr. H. P. ROBINSON said that he had come expressly from Tunbridge Wells to attend this special meeting for this special purpose, and he did not think that the absence of members who did not feel enough interest in the matter to attend ought to influence the proceedings.

After some conversation as to whether the members had full opportunity of knowing of the meeting, in which Mr. Dallmeyer, Mr. Dymond, the Chairman, and others took part,

Mr. HOOPER, as acting secretary, said that every member had received full intimation of the meeting, which was prominently announced in the Journal, which, with draft of the new rules, was sent to every member. An intimation was given at the last meeting, which was a full one, to the effect that a meeting would shortly be called, and members having any interest in the question would doubtless have looked to their Journals and become fully familiar with the fact. But not only was the announcement made in the Society's Journal, it was announced in the two weekly journals, one or other of which everybody read. Any statement that members had not full means of knowing of the meeting was trivial and childish.

Mr. BIRD said it was certainly to be regretted that a fuller attendance was not present to consider the laws. He could state that the draft had been made carefully, and without any kind of personal bias; but still there were points upon which he should have been glad to have had the opinion of a full meeting. As it was, he thought the simplest plan would be now to pass the laws as a whole, and any point requiring revision could be fully considered at the annual meeting. This would be better, he thought, than leaving the whole question in suspense until that time. He hoped, therefore, Mr. Hughes would withdraw his motion.

Mr. HUGHES urged his motion.

Mr. DAVIES seconded Mr. Bird's motion. The matter could be fully discussed hereafter, if necessary; but he thought that this need not be expressed in the motion, which should be simply to the effect that the laws be passed as they stood.



Mr. BLANCHARD thought that the non-attendance of members was in one sense a very high compliment to the council, and showed that they had full confidence in the laws they had drafted. Feeling that there was no need to discuss them, members simply left them to be passed.

Mr. HOOPER took a similar view. Non-attendance showed two things: the members were sick of having their time wasted on merely business considerations in which they had little interest, and had perfect confidence in their council, to whom they left the matter.

The CHAIRMAN then put Mr. Hughes' motion, which was lost—himself, his seconder, and another only voting for it.

The CHAIRMAN then put the motion that the laws be passed *en masse*.

Mr. DYMOND said that the laws were open to verbal improvement. The first law, for instance, was not specific enough. It did not say by whom some vice-president or member of the council should be appointed to preside in the absence of the president. He should move, as an amendment, a verbal alteration, making the matter more definite.

Mr. HUGHES said that the rules did not, in many respects, meet the wishes of many members of the society whom he represented. There was no provision for a chairman at all in the absence of all the council, a thing which happened when, at a recent meeting, all the council left the room.

The CHAIRMAN said that even on that occasion all the council did not leave the room. But he must ask if Mr. Hughes, in these remarks, intended to second Mr. Dymond's amendment.

Mr. HUGHES said no; he simply intended to challenge everything he could.

The CHAIRMAN said as the amendment was not seconded, he would simply put the motion that the laws be passed, which was carried.

Some conversation followed on the question whether the discussion of the laws at the annual meeting was to be made compulsory, or merely left to the motion of any one anxious to raise the question at that time; but no resolution on the subject was passed.

The CHAIRMAN said that as in the new laws the treasurer was not included in the eighteen members of council, another vacancy existed; and as Sir Charles Wheatstone was next on the ballot, he announced him as the new member of council.

The CHAIRMAN then announced that an exhibition would be held as usual, the time and place of which would be duly published.

The CHAIRMAN next announced that Mr. Richard Friswell, F.C.S., had been elected by the council as secretary and editor. He added that the society were much indebted to Mr. Hooper for his able services in the interregnum. The council had already passed a vote of thanks to him, and he now asked the meeting to do the same. This was done by acclamation, and the proceedings terminated.

#### AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE annual meeting of the council of this society was held on the 27th inst., at 12, York Place, Portman Square, the Right Honourable the EARL OF ROSSE in the chair. The minutes of the last meeting having been read and confirmed, the SECRETARY laid before the meeting the pictures for the current year, and Mr. GLAISHER read his report upon them, of which the following is an abstract.

"After a good two days' work in examining and classifying the pictures for this year, the first thing that suggests itself to one's mind is the large proportion of good pictures, and the small number of inferior ones. It is no unusual thing to have more pictures worthy of prizes than there are prizes to award, but this year we vote no less than sixty-eight, which I may call should-be prize pictures, and which demand our special and careful consideration. This very large number of first-class pictures is almost unprecedented, and shows a healthy vigour in our no longer young society, which cannot but be gratifying to our Royal President and the members of the council, most of whom have been with us from the beginning.

"I notice with pleasure that Mr. Hobson, though so good last year, is this year better still, and must now rank as one of our most accomplished photographers. Mr. Beasley and Mr. Murray again compete for the dry plate prize, but the latter gentleman, though quite equal to last year, is now surpassed by Mr. Beasley, whose works this year take precedence, not only of the dry plate pictures, but all the wet plate ones also.

"Mr. Ravenshaw's Indian views are perfect gems. Captain

Lewis again sends us some very interesting studies of prison life. Col. Locke, whose pictures last year were wanting in vigour, now steps into the very foremost rank. Captain Layton, although perhaps still falling short of a prize, sends us some views of great artistic merit. From Sir Joslyn Coghill we have a series of charming Swiss views; whilst Captain White and Major Allen still keep the high position they have held for some years past.

"I notice also some of our new members, whom we may welcome as acquisitions to our society, amongst whom I may mention Mr. G. Brewis, Captain Toke, Mrs. Hancock, and Mr. Milne."

Class 1 contains ninety-four pictures contributed as follows:—J. H. Ravenshaw, 15; F. Beasley, 13; Sir J. Coghill, 9; Captain White, 8; Major Allen, 6; Col. Locke, 6; W. S. Hobson, 5; R. Murray, 4; Captain Lewis, 4; G. Brewis, 4; J. W. Richardson, 3; Rev. W. E. Hancock, 3; Captain Toke, 3; Captain Layton, 2; J. McAndrew, 2; Mrs. Hancock, 2; D. Knapping, 2; W. G. Hunter, 1; T. Brownrigg, 1; and R. O. Milne, 1.

Class 2 contains one hundred and fifty-nine pictures contributed as follows:—J. H. Ravenshaw, 23; F. Beasley, 16; Rev. W. E. Hancock, 12; Captain White, 11; Captain Toke, 10; T. R. Shervington, 7; J. McAndrew, 7; W. S. Hobson, 6; S. G. B. Wollaston, 6; D. Knapping, 5; Captain Layton, 5; Major Allen, 4; N. M. Settna, 4; Col. Locke, 4; G. Brewis, 4; R. Roberts, 4; Sir J. Coghill, 3; R. Murray, 3; W. G. Hunter, 3; J. G. Hyde, 3; Gen. Sladen, 3; R. O. Milne, 3; A. Suzanne, 2; J. W. Richardson, 2; Captain Lewis, 2; Mrs. Hancock, 2; J. C. Stenning, 2; T. Brownrigg, 1; J. H. Ritchie, 1; and Captain Fox, 1.

Class 3 contains 169 pictures contributed as follows:—J. W. Ravenshaw, 15; T. R. Shervington, 12; Rev. W. E. Hancock, 12; S. G. B. Wollaston, 11; F. Beasley, 10; J. H. Ritchie, 9; Capt. White, 8; Capt. Layton, 7; Mrs. Hancock, 6; J. C. Stenning, 5; J. W. Watling, 5; J. McAndrews, 5; R. Murray, 5; Rev. T. F. Ravenshaw, 4; A. Suzanne, 4; J. G. Hyde, 4; E. Milson, 4; General Sladen, 4; D. Knapping, 4; Capt. Toke, 4; Sir J. Coghill, 3; Capt. Fox, 3; K. Roberts, 3; R. O. Milne, 3; J. W. Richardson, 3; N. M. Settna, 2; Col. Locke, 2; Mrs. Fox, 2; G. Brewis, 2; Capt. Lewis, 2; W. G. Hunter, 1; T. Brownrigg, 1; W. S. Hobson, 1; G. W. D. Green, 1; Mrs. Welbourne, 1; and Rev. H. Palmer, 1.

The remainder of the pictures are comprised in Classes, 4, 5, and six.

The following prizes were then awarded:—

First prize, F. Beasley, for Nos. 36, 14, and 24—a large silver goblet.

J. H. Ravenshaw, Esq., for Nos. 251, 261, and 265—a silver goblet.

W. S. Hobson, Esq., for Nos. 103 and 105—a silver mounted claret jug.

Col. Locke, for Nos. 32 and 34—an oil painting in gilt frame.

Sir J. Coghill, for Nos. 11 and 14—a large album handsomely bound in morocco.

Capt. White, for Nos. 57 and 77—a graphoscope.

Major Allen, for Nos. 144 and 148—an oil painting in gilt frame.

D. Knapping, Esq., for Nos. 12 and 14—a large album handsomely bound in morocco.

J. McAndrews, Esq., for Nos. 25 and 28—a graphoscope.

T. Brownrigg, Esq., for No. 4—an oil painting in gilt frame.

G. Brewis, Esq., for No. 126—a large album handsomely bound in morocco.

Capt. Lewis, for No. 52—an album handsomely bound in morocco.

R. O. Milne, Esq., for No. 2—an album handsomely bound in morocco.

Capt. Toke, for No. 10—an album handsomely bound in morocco.

R. Murray, Esq., for Nos. 81 and 82—an oil painting in gilt frame.

Certificates of Honorable Mention were awarded to W. G. Hunter, Capt. Layton, J. W. Richardson, Rev. W. E. Hancock, and Mrs. Hancock.

A. J. MELIUS, Hon. Sec.

#### THE PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.\*

THE usual meeting was held May 5, 1874: president, H. J. NEWTON; secretary, O. G. MASON. The minutes of the last meeting were read and approved.

\* Condensed from *Anthony's Photographic Bulletin*



Mr. HENRY T. ANTHONY read from the PHOTOGRAPHIC NEWS of March 27, 1874, an article on "The Reproduction of Negatives."

Mr. BIERSTADT exhibited a negative which he had produced by the directions given, except that he had found it necessary to add a great deal more glycerine. He used 30 drops of glycerine to 100 grammes of the mixture, our atmosphere being so dry. He considered it a very simple process.

Mr. ANTHONY also read from the PHOTOGRAPHIC NEWS of April 2, 1874, Mr. Grogson's article, "On the Elimination of Hyposulphite from Negatives."

Mr. MASON. I remember that some years ago I made some large negatives for Mr. Rutherford's observatory from some positives of the moon which he had prepared. Some two or three years afterwards we found those positives entirely ruined. They had been varnished. The film was covered with peculiar markings, in which were countless little globules, such as we sometimes see on spider webs early in the morning from the dew, very fine and irregular forms, something like honey-comb. I think that since then Mr. Chapman has invariably sealed the negatives in balsam. I attributed that, and so did Mr. Rutherford at the time, to the presence of hyposulphite, probably from insufficient washing.

Mr. BIERSTADT. Were those markings ever seen on anything but plate glass?

Mr. MASON. I cannot say, because plate glass is invariably used for that work.

Mr. BIERSTADT. I have found that plate glass always works in that way, but any other glass never does, whether varnished or unvarnished; and plate glass is unreliable to keep for any length of time.

Mr. C. B. BOYLE. Plate glass is ground, while the other glass has a hard surface. A fire surface is always the best surface.

Mr. BIERSTADT. The surface produced by grinding does not work well for a negative; the natural surface, not ground or polished, is better.

Mr. CHAPMAN. All the glass that we use is ground flat. We have a great deal of difficulty about the glass sweating on the varnished side; some think that it is on account of soda in the glass. When this hard fire film is ground off, it presents a softer interior, and the soda in the glass attracts the moisture, and there is a condensation upon it, which cannot be prevented in any way that I know of. I have had no negatives or positives for the last four years which caused difficulty by cracking. Those that Mr. Mason spoke of were made on glass which was not albumenized. I have plenty of albumenized plates which have been standing for four years, and which do not seem to have been affected. I presume that effect which he speaks of was produced by insufficient washing.

Mr. HUDSON. When the surface is ground, some parts will be harder than others, as with steel.

Mr. J. B. GARDNER. I have a large number of negatives made on plate glass thicker than is commonly used, such as is used for large windows. I bought nearly two tons of that glass in strips just large enough to cut up to the size I wanted. I have several thousand negatives on that glass, and I have found invariably that the plate glass negatives kept better than others. The trouble alluded to I have never seen on these plates.

Mr. MASON. Is there any peculiarity in the washing of your negatives?

Mr. GARDNER. I have been in the habit of using cyanide of potassium instead of hyposulphite. I do not clean with hyposulphite.

Mr. BOYLE. The statement made by Mr. Chapman, that plates coated with albumen were not so affected, implies that the albumen prevented the dampness of the atmosphere from acting upon the soda of the glass, and therefore saved the plates from that peculiar action.

## Talk in the Studio.

THE AMATEUR'S PHOTOGRAPHIC GUIDE BOOK.—Mr. W. J. Stillman has just issued a guide book for amateurs which will prove useful to many. Mr. Stillman is an indefatigable experimentalist, a skillful worker, and a careful observer. He has worked carefully with most of the dry processes, with emulsion processes he has experimented more than most men; and he describes operations clearly and accurately. With an unhesitating candour not often met with, he states his opinion

of various processes, and of various kinds of commercial plates; giving details on many points regarding which amateurs desire information not always attainable. Besides all this, the work contains concise simple instructions in the ordinary processes of photography, unencumbered with unnecessary matter. Altogether, the work will be at once welcome and useful to amateurs.

PICTORIAL BACKGROUNDS.—Mr. W. Tilley sends us some examples of cards with pictorial backgrounds produced by double printing, which is effected, he says, in a novel manner, more simple and easy than anything which has been described. Of the method we cannot, of course, speak, beyond saying that, judging from the results, it seems effective.

PRINTING FROM TWO NEGATIVES.—A correspondent signing "A Little Gun in the Provinces" sends us some examples of work which he has for some time been doing with two negatives for one print, the duplicate negative being produced by the wet process, the precise mode of producing it not being described. He sends in each case a print from the single negative, and one from the two negatives superposed. In the latter the results are in all cases greatly superior, having deeper, richer shadows; purer, brighter lights, with full half-tone and fine modelling; and that peculiar porcelain-like effect seen on "photo-mezzotints" produced by Carl Meinerth's process. The results are encouraging, and with large heads, instead of full-length figures on cards, the pictures would be finer still. M. Denier's pictures produced in this way are large heads on cabinet plates.

CURIOUS PHENOMENA.—Most photographers meet with curious and abnormal results occasionally, the record of which might be instructive, and would certainly be interesting. A correspondent of the *Philadelphia Photographer* says:—"A short time since I placed two ferrotype plates, in a wet state, face to face, and left them to dry. On taking them apart I found that the image on each plate had impressed itself on the other, just as perfectly as if it had been lighted and developed in the usual way. These plates had been just exposed, developed, cleaned, and washed in the usual way, and had dried during the night in the dark-room. I send you one of the plates." He adds: "Some years since I was copying a Daguerreotype, by the Daguerreotype process, and by oversight left the plate exposed to original all night, and until ten o'clock next day, when, on taking the plate out, I found a picture as distinctly formed as if it had been mercurialized; this to me was a puzzle, and is yet, as the copying-room was so far from the dark-room."

A SIMPLE WATER TANK.—A correspondent of our *Philadelphia contemporary* says:—"I will here describe how I make my photographic water-tanks. I have one I made six years ago last fall, after I had lost my gallery by fire, and not having left too much of the useful, I contrived in every way to be saving. I took some half-inch siding, planed the rough off, made a tank of it, got some white lead and oil and some cheap oil-cloth. I thinned the lead slightly with the oil, and painted the box inside with it as thick as I could brush it on; then pressed in the oil-cloth smooth all over, and tacked it around the top of the tank. Folded the oil-cloth in the corners so as to make it fit the tank. When putting the tank together I stay the joints with short pieces of wire, so that the oil-cloth won't break after the lead gets hard. This tank has been used almost daily ever since it was made, and it is good yet."

PHOTOGRAPHY IN VENICE.—Mr. E. L. Wilson, speaking of photography in Venice, says:—"Pictures for the camera bristle up about you in all directions, and really photography is one of the principal industries, for no one will leave Venice without a good supply. They are exceedingly well taken as a usual thing, and very cheap, of all sizes, from carte to full sheet. The largest producer is Signor Charles Naya, who has not only very fine salesrooms on St. Mark's Place, but a very extensive manufactory, so to speak, near the Grand Canal. We visited both, and found much to interest us. We noticed before, in many of the churches, a camera standing alone, exposed to some bit of carving, or sculpture, or painting. These were the servants of Signor Naya. He uses dry plates, and on such objects where the changes of light are not great, and where there is not much light at all, he often exposes as much as five days. Of course this cannot be done with exterior views. There are few photographic establishments in Europe more extensive than Signor Naya's. He occupies the whole of what was once an immense palace. His business is divided systematically into departments, in each of which is the usual number



of assistants. Madama Naya presides over all, and we found her most agreeable and intelligent. We were courteously shown the whole establishment, and all the operations, from the preparation of the plates to the printing and finishing. Fresh water is a scarce article in Venice, and is brought to the photographer daily. Washing the prints, therefore, must be done in the most economical manner—more economical, sad experience tells me, than effectual. I am sorry to say. Signor Naya produces some very pretty results by printing on blue paper, and then colouring the buildings, and putting in clouds. The results look like pictures elaborately coloured, but they are sold remarkably low. Signor Naya understands the policy of saving his wastes, and altogether his establishment is one of the best managed I ever saw throughout. I carried away a great weight of his pictures, and they refresh my memory of the lovely breathing time we had in 'Venice, my beautiful.'

**NOTE ON THE ACTION OF LIGHT UPON NITRIC ACID.**—By W. H. Aston Peake.—Pure nitric acid, when exposed to light for any length of time, gradually turns of a yellowish green tint, and the unoccupied portion of the bottle containing it becomes filled with brown fumes. On sealing a quantity of the acid in a flask, and exposing it to direct sunlight for three days, the action became very strongly marked, and on examination the acid was found to contain a considerable quantity of nitrous acid. I would presume, therefore, that the action is a reducing one.—*Chemical News*.

**DATES IN PORTRAITURE.**—The *Stationer* says that "in commemoration of Her Majesty's fifty-fourth birthday a photographer has published a photograph in cabinet and carte-de-visite sizes, in each of which is given two vignette portraits of the Queen, one representing her in 1840, and the other in 1874. Contrasts of portraiture of the same individuals are always interesting, but they have not in our opinion had sufficient attention paid to them. This publication may therefore prove the prelude to a new series."

## To Correspondents.

**FAIRPLAY** writes to point out that the explanation of the *soi-disant* "Henry Edward Thompson, M.D.," to the effect that his diploma "may be" American, will not hold water, inasmuch as whether it is English, American, or from any other source, the holder's name *must* be duly placed on the "Medical Register" before he can practise in this country. And he further points out that instead of producing any one who saw or heard of a collodio-chloride print before 1864, he quotes a passage from M. Gaudin which proves that his allusion four years earlier was an untested suggestion—so far untested, in fact, that he suggests the use of a chloride which is not soluble in collodion or in alcohol. We give the substance rather than the text of our correspondent's letter, because we do not wish to occupy more space with replies to vulgar abuse, nor to repeat refutations of statements which are not only unsupported by any evidence, but which practically refute themselves. The mythical "M.D." scarcely required any exposure; the trick was too transparent. The condition of mind which can take pleasure in such coarse antics is surely as worthy of pity as of grave castigation.

**T. W. REYNOLDS** writes to say that he fails in getting any approach to the rapidity often described with a variety of dry processes. Tannin, coffee, beer, albumen and coffee, and others, the exposure for which has been described as three times that of wet, he finds to give him poor results with ten times as long as wet, and he asks for aid in discovering the cause. He will see, on reflection, how impossible it is to give any definite aid upon such a general statement of experience. If he will describe in detail all the steps in any one of the processes in which he fails we may be able to suggest a source of error. He prefers the collodio-albumen process. If he succeeds with it he cannot do much better. With hot development, we have obtained good results with an exposure of three or four times wet collodion. With care, alkaline development may be successfully applied; but we prefer Mr. Mudd's method of using heat. The gum-gallic process succeeds well with three or four times wet exposure with the ordinary mode of development, and with the strong alkaline development it requires no more exposure than wet, as we have seen in Mr. Gordon's hands. The rapid albumen and coffee process gives, in M. Constant's hands, perfect as well as rapid results, which we have seen. Where our correspondent fails we cannot conjecture, except it be in slightly trying many processes instead of working out one with steady perseverance.

**T. Y. R.**—We cannot say with certainty what material will best answer to stop a leak in one of Doulton's glazed filters. Much depends upon the size and position of the crack. Marine glue is a favourite cement with us for such purposes. White lead may possibly answer. There are various cements sold for such purposes.

**B. L.**—What process do you use? How do you develop? In producing transparent positives on collodion, full exposure is of vital importance in obtaining a detailed, delicate image.

**NEWS AGENT.**—If the proper steps for securing a copyright in the picture were not taken at the time of producing and issuing it, no steps now taken will confer copyright. 2. No matter what the position of the sitter, if there be no copyright you can copy it; but equally, if the proper steps were taken, you cannot copy without infringing the law.

**R. A.**—Mr. Solomon used to keep the collodio-chloride paper prepared by Obernetter. We are uncertain whether he does so now or not. Mr. Bruce, of Dunse, obtains his, we believe, direct from Herr Obernetter in Munich. Messrs. Mawson and Swan supply collodio-chloride ready for use. Try Marion and Co. in regard to the punches for cutting medallions.

**D. E. D.**—We do not remember any one who undertakes the repair of rolling presses. Bury Brothers' firm no longer exists, we believe. Possibly the nature of the repair may permit it to be done by any working smith. We should not, in your position, hesitate, if other means fail, to consult Hughes and Kimber. If they do not undertake the work, they may tell you who will.

**DARTMOOR.**—Stereographs on glass are produced in many ways. Some are produced on wet plates, some on dry collodion plates, some on dry albumen, some by the Woodbury process. Those to which you refer as having the appearance of being mounted on glass are probably printed with a protective mask which prevents the image being produced outside the mask.

**ELECTRO.**—The questions you ask could only be answered efficiently, we fear, by a manufacturer of electro-plate. The amount of silver by weight which should be deposited on a spoon or fork could only be determined, we apprehend, by a practical man; and so with your other questions. There are several manuals of electro-metallurgy published, from which you may derive some hints.

**CASTRO.**—If your collodion thickens by merely standing a week or two in bottle, it is manifestly not properly stopped, and the ether escapes. Use a good cork. If it thickens from use, dilute with new thin collodion. You may dilute with ether and alcohol; but unless these be pure, you may risk injuring the collodion.

**E. HERTON.**—We have addressed and forwarded the letter. In making lime water you simply place a lump of quick-lime in a bottle of water, which will take up a minute trace of the lime, and no more.

**WARWICK BROOKES.**—The "Rembrandts" you forward have many fine qualities. The lighting is very effective, and the retouching managed with skill and delicacy, although, perhaps, a little in excess in some cases.

**CAPTAIN TURTON.**—We will write shortly. Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED.

- Mr. J. S. LAMBERT, Jarrow-on-Tyne,  
Two Photographs of H. Vincent, Esq.
- Mr. H. GREGSON, Luton, Beds.,  
Two Photographs of Rev. A. J. Hunter.  
Two Photographs of Rev. J. O'Neil.  
Two Photographs of Rev. T. J. Lee.  
Photograph of Rev. T. J. Lee, Mrs. Lee, and three Children
- Mr. T. BERNARD, Limerick,  
Photograph of Father Carberry.
- Mr. J. GROOM, Shrewsbury,  
Photograph entitled Courtship and Matrimony.
- Messrs. J. and E. YEMAN, Bedale,  
Photograph of Sir Henry and Lady Peirse.
- Mr. G. BRUCK, Dunse,  
Photograph of Professor Turner.
- Mr. J. WERGE, Berners Street, Oxford Street,  
Photograph entitled "Blowing Bubbles."
- Mr. C. TAYLOR, Woolwich,  
Photographic Group of Woolwich Cadets, including the Prince Imperial.
- Mr. A. S. FISK, Woodbridge,  
Two Photographs of Interior of St. Mary's Church, Woodbridge.
- Messrs. WOLSTENHOLM BROTHERS, Blackburn,  
Photograph of W. E. Briggs, Esq.
- Messrs. SYMONDS and Co., Portsmouth,  
Photographic Group of five Admirals.
- Mr. J. J. E. MAYALL, Brighton,  
Two Photographs of Mr. J. Pettie.  
One Photograph of Mr. J. Danby.  
One Photograph of Mr. D. Price.  
One Photograph of Mr. W. Q. Orchardson.  
One Photograph of Mr. F. Hall.  
One Photograph of Mr. P. F. Poole.
- Mr. O. A. CARTER, Hailstead,  
Three Photographs of Rev. G. Tear.



## The Photographic News, July 10, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### PHOTOGRAPHY APPLIED TO MILITARY PURPOSES—PHOTOGRAPHS FOR THE MILLION—THE END OF A SAD STORY.

*Photography Applied to Military Purposes.*—A lecture has been delivered at Brussels upon the application of photography to military purposes, and the remarks made by the lecturer have since been printed for circulation among the Belgian soldiers, the pamphlet bearing the title of "Les Eléments de la Photographie." The author is Captain A. Hannot, who is appointed chief of the photographic establishment attached to the Belgian War Office, and is entrusted with the elaboration of the art in connection with military matters. In Paris, Captain Dumas has succeeded Commandant Lausselat, whose name was well known to photographers five years ago. Captain Dumas, who occupies a similar position in the French War Department, has also been very busy of late in making the best possible use of the camera in the War Office establishments, and has also suggested some useful applications of the art which would be, no doubt, capable of serviceable employment in war times. But the first comprehensive report on the subject of photography and war was a paper read in this country more than five years ago before the Royal United Service Institution by Mr. Baden Pritchard, of the War Department, Woolwich, in which he gave an account of the earliest applications of the art in the Crimean war, at the instigation of Lord Panmure, and showed how usefully the camera might be employed at the present day in making reconnaissances of an enemy's country, and also in securing sketches to accompany and illustrate military reports sent home. There can be no doubt that most important applications might be made of the camera in warfare, whether as a reconnoiterer or as a recorder of facts, although, possibly, the time is far distant when we shall accomplish what Chevalier was so sanguine of performing by means of his photographic plane-table, viz., that of directing the fire of a battery by night, or converging the firing of a number of guns upon one fixed point by the aid of data previously recorded in his instrument during the daytime.

*Photographs for the Million.*—Some little while ago we called attention to the issue of photo-mechanical prints in the London *Figaro*, and suggested that they were possibly produced at MM. Goupil et Cie's house in Paris. We have since been informed that they are printed in London at the Photo-Relief Printing Company's Works, Brompton. This first essay at producing cheap and permanent photographs with a twopenny journal seems to have been so successful that a penny publication is now to be issued which is also to be illustrated by a carte-de-visite portrait of some celebrity or other. One of the first portraits is to be that of the great Barium, whose picture many will be glad to possess, and one of Adeline Patti is to follow: "Patties a penny a piece" are cheap enough, in all conscience, and there can be no doubt as to such popular portraits as these finding a ready sale. Of course, with such a thriving trade in small pictures, other photographers must suffer, unless they also make a step of progress, for no one will give a shilling for what can be bought for a penny. It seems to us that the best thing would be for photographic publishers to inaugurate a size rather larger than the ordinary carte, and print as many vignettes as possible, for it is just this pleasing style that is the great stumbling block of mechanical processes. But unless something of this kind is done, the lucrative trade in photographic portraits must suffer considerably.

*The End of a Sad Story.*—The tragic end of a story which was last year mentioned in these columns was contained in the *Times* of Monday, under the heading of "Death on a Glacier." Our correspondent in August last,

writing from the Engadine, mentioned the case of an old gentleman in the hotel who was found missing one morning. Our correspondent, like most of the other residents, thought little about the matter, and the subject was looked upon in anything but a serious light for the first few days, for the gentleman in question was of eccentric habits, and had often disappeared for days together on some mountain excursion. In speaking of the company gossiping at table d'hôte, our correspondent said, "A matter has recently cropped up which excites the deep interest of us all. An old gentleman, who has been drinking the waters for some time past, has suddenly disappeared, and gone no one knows whither. We all suppose that something horrible has happened to him, because that, of course, makes his case all the more complicated and obscure. Every little fact relating to the missing one is thoroughly ventilated, and when he is under discussion we speak in hushed tones, and listen with bated breath. You would be sent to Coventry immediately if you suggested he had merely gone into Italy over the Bernina Pass, for that would, of course, be such a commonplace thing to do; and, besides, it would make an end to the mystery. He had a singular habit, had this old man, I am told, of asking everybody their name, and when his own was demanded he would refuse to give it. One day, however, it appears, on being pressed, he said his name was Brown. This was all very well, but, one fine day, another tourist named Brown made his appearance, and the latter straightway questioned the mysterious old man as to his right to the family appellation. Being thus brought to bay, the unknown then and there frankly acknowledged that his name was not Brown; but he never gave any other, so far as I can discover. The poor man's name, however (the Rev. Bertie Marriott), has now been found out, together with his remains, which have been lying upon the Morteratsch Glacier, unheeded, for nearly twelve months. He had wandered alone upon the dangerous ice fields, and slipped over some glassy precipice. It is singular that his body should have remained so long undiscovered, for guides and parties of excursionists do not unfrequently march over the ice in ascending some of the snowy peaks in the neighbourhood. Our correspondent himself was there on several occasions after the tragic event whilst engaged in securing camera pictures of the far-famed glacier.

### A PHOTOGRAPHIC ALBUM.

BY E. LEGOUVE.\*

PHOTOGRAPHY has a great fault; like all portrait painters, it often distorts the faces that it reproduces. I know of more than one photograph that is a calumny. First of all, there are faces that are anti-photographic—subjects whose likeness the sun never catches. Why? It might, perhaps, be possible to give more than one scientific reason, but the principal one is, that photography is employed to reproduce us only when we are at rest, condemned to immobility, and our features, consequently, are more or less disfigured by contraction.

It matters little that the reproduction of the features is exact. Our faces do not consist alone of the bony structure, but also of our physiognomy, of the movements of our hearts and minds, of that inside of which I have just spoken, and which acts on the outside when it causes our eyes to shine, our lips to palpitate, our nostrils to dilate, relieves the flesh from its materiality, and, finally, when it casts over our features the fire of anger, the radiance of joy, and the light of the mind or of the soul.

All these things go to make up our individuality. Now what becomes of them in photography? For example, what becomes of the man of imagination when the photographer hurls at his head his terrible—"Don't move! Don't move!" At this terrible phrase the features con-



tract, the looks become troubled, the eyes water, the blood rushes to the heart and brain with violence; you are no longer yourself. We must, then, accept the photographic likeness only for what it is worth. It oftentimes deceives us by its strict exactness. For instance, I saw in this album the picture of an illustrious octogenarian of our day; this picture is a masterpiece, but one likely to deceive. This wrinkled forehead, these hollow cheeks, these sunken lips, these eyes nearly veiled by their lids, doubtless offer an admirable representation of the truth, but of a truth which is material and exterior, and which, consequently, is but one-half of the truth. To reproduce the age of the human face as we would that of a monument is to alter and to impair it. Those who have seen and heard this illustrious old man converse, know that, besides the him of this portrait there exists another he—one full of fire, of life, of grace, even, and from whose face, as if by enchantment, as soon as he speaks, fifteen or twenty years take their flight. Consequently, I have under my eyes but the half of the medal, and that the least exact half—the reverse side.

Photographic art abounds in errors of this kind. How can we correct these false impressions? How complete, at least partially, these insufficient testimonies? I know of one way of doing it. It would be necessary, in an album like this, to add to the picture of the personage a few lines of his writing. We are disposed to ridicule the persons who pretend to judge of one's character by his handwriting. This is an error. Writing is also a portrait, as are gait, actions, voice; as is everything that emanates from us. I am quite disinterested in speaking thus, as I write an abominable hand. Ah! I could explain to you, if I wished, in what and how this awful scrawl resembles me, but I prefer not to. It is certain that it would be very interesting to complete photography by autography. A simple phrase written by that illustrious old man at the bottom of his portrait would suffice to make us understand that the picture lies. The hand would protest against the face; and, thanks to that writing, so firm, so straight, so bold, suddenly from behind the impaired front of the temple would shine in our eyes the lamp of the sanctuary; that is to say, the eternal youth of the intelligence, of the character, and of the soul.

I offer my idea to the owners of albums. They will there find another means of indulging the ruling passion of our day, the most universal, the most common to all classes, to all ages, and to both sexes—curiosity! For, in speaking of curious persons, we always say—"Eve's daughters!" What about her sons?

I do not wish to close my remarks upon photographic art by a desideratum, when there are so many other merits pertaining to it of which I have not spoken. Ought I, for example, to omit mentioning it is a travelling companion? What a marvellous auxiliary in all great scientific expeditions. With what power it brings again before our eyes the gigantic monuments of the East, in all their striking originality. What a resurrection of nations long since passed away is this evocation of their temples, of their statues, of their gods, of their earth, of their sky—I am almost tempted to say, of their sun, for the depth of the shadows reveals the power of his light. And there is yet another blessing of photography which exceeds by far this one and all the others which I have mentioned.

Formerly, scientific inventions were too often curiosities of the laboratory, treasures of the sanctuary. To-day, the first condition of the conquests of genius is to resemble the sun, to shine for everyone. Photography has this glorious privilege: far from despising the common herd, it is for it that it was created.

It has placed within the reach of the most humble the great pleasure formerly reserved for the privileged classes—the pleasure of possessing the likenesses of those we love. Thanks to it, the poor peasant who leaves his

village for the army carries in his knapsack, not the baton of a marshal of France, but what is easier and not less pleasing, the portrait of his mother, with whom he has left his own.

Thanks to it, there is not an humble cot that may not hereafter possess, like the most aristocratic chateau, its gallery of family portraits—its collection of ancestors—for, be it said, we all have ancestors, and these genealogies of tradespeople, of artisans, of workmen, will not be less glorious nor less useful to their sons than they were for the descendants of the nobility, a long line of ambassadors, of generals, and of statesmen.

If the ones represent race, the others represent family; if the succession of brilliant uniforms, of dazzling decorations, kept up in the minds of the scions of nobility true sentiments of pride, the gradual changes from the blouse to the jacket, from the jacket to the coat, from the coat to the robe of the advocate or judge, will speak of courage and hope to the sons of the lower classes: the former learned from their fathers how not to fall, the latter will learn from theirs how to rise.

Have I said all? No; photography has this final claim to our gratitude.

What parents have not often made the sad reflection that, in reality, we lose our children every year? Even when God leaves them to us, time disputes our possession of them. Each day that passes takes away something belonging to them, even though it may render them more beautiful. The child of to-day is not like the child of yesterday, and, in its turn, will differ from the child of to-morrow. Years, in succeeding each other, devour each other; childhood absorbs infancy, only to disappear shortly in youth; so that when our daughter buds into womanhood, we have lost all that has preceded and produced this opening of the flower; we have lost the varying charms of her first fifteen years. Memory, however faithful it may be, possesses them but as a whole; the charming developments in their changes from day to day have escaped us. Well, photography repairs this cruel loss. It gives us back what time has stolen from us.

Let us, then, ask photography to give us each year pictures of our children, and forthwith we regain that series of metamorphoses through which they have passed. We find again together, with all their changes of face, all their transformations of intelligence or character; we feel, at the same time, reviving in our hearts all the joys, all the fears, all the hopes, that each of these transitions has given us. It is not they alone who live again before us, it is we who live again in our own eyes. And for whom? Still for them. Each one of these portraits is not only a joy, it is a lesson. Each one recalls to our mind a danger from which we have saved them, or a fault which we have combated in them. This review, which embraces all the career through which they have passed, teaches us to guide them in the career yet to follow, and, finally, if God afflicts us with the most terrible misfortune known to this sad earth: if we see die before us those who should have closed our eyes in death—then, at least, we shall have the consolation of preserving of them all that Providence has vouchsafed to us. Their future is taken from us, but their past belongs to us in its entirety.

## HOW TO MAKE A POCKET CAMERA.

BY W. J. LANCASTER.\*

WE must now turn our attention to the lenses used with these small cameras. We will suppose ourselves to possess a meniscus achromatic lens, having five inches focus from its back or convex surface; a series of brass tubes and castings; and a lathe, vice, and tools, for the purpose of making mount. The mount can be made either in a rigid form, or may be made with rack-work for adjustment; in



either case we must make a cell to hold lens. Supposing the lens to be  $1\frac{1}{2}$  in. diameter, then we must use a triple drawn piece of mandril tube, having an inside diameter of  $1\frac{3}{8}$  in., and outside diameter of  $1\frac{5}{8}$  in. The length should be about half an inch. This tube should be put upon a wooden chuck, and a space turned in just deep enough to allow the lens to be burnished in. The outside of the tube must be screwed, so as to enable one to screw it into the body of mount. The screw should be perfectly true with circumference of lens. The next part to make in a rigid mount is the body tube. This tube should be large enough to have cell screwed into it; it might be about  $1\frac{1}{2}$  in. inside diameter, strong mandril tube, having a length of 1 in.; the cell containing lens to screw into back portion; the screw tools used should make a thread about 37 to the inch. The front part of body tube should also be screwed similar to the back part, for the purpose of taking a plate with hole in centre, and plate of revolving diaphragms on one side of the large plate. The diameter of this plate should be  $1\frac{1}{2}$  in.; it should have a projecting ring at the back, screwed with outside tool, having same thread as inside of front part of tube; also, a hole, half an inch diameter, should be turned in the centre of this plate; then a second circular plate, rotating on a screw, should be made  $1\frac{1}{2}$  in. in diameter, having four holes, varying from  $\frac{1}{2}$  in. to  $\frac{3}{8}$  in. They should be, respectively,  $\frac{1}{2}$  in.,  $\frac{3}{8}$  in.,  $\frac{1}{4}$  in., and  $\frac{3}{16}$  in., the amount of light entering through each being 1,  $\frac{4}{16}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ , thus giving an exposure exactly proportional to reduction of aperture, thus being in the proportion of 1, 2, 4, 7—that is, smallest diaphragm requires seven times the exposure of largest diaphragm, &c. The plate revolves on centre screw, and on its backed surface has small punched marks, which fit on to a pivot connected to a spring in inside of front part. The aperture in revolving diaphragms and front plate is closed by means of a moveable plate which should be  $\frac{1}{2}$  in. in width, so as to entirely cover the  $\frac{1}{2}$  in. aperture in front of mount; it is held down by a screw, on which it moves away from and over the aperture, a small pin preventing it going too far. If it is preferable to make a rackwork mount, then the tube containing cell with lens must have another tube outside, and sliding easily; on this outer tube is built the pinion rod, and strap holding pinion down, and a slit must be made in inner tube to hold a piece of rack same pitch as pinion; the screws in the strap holding pinion down regulate the pressure of pinion on rack. A milled head is turned to fit on end of pinion wire, for the purpose of focussing. A flange must now be made to hold lens on to camera; the large tube should be screwed outside and flange inside, so that lens may be taken off camera and carried separately. The arrangement of lenses for viewing image on ground glass, and dispensing with black cloth, consists of two plano-convex lenses mounted similar to a Coddington lens, with a diaphragm between them, the two plane surfaces being outside. The part nearest eye, when in use, should be very hollow, so that very little light can come to eye except from ground glass. The tube containing these lenses screws into another tube, blackened inside. In using the focussing lenses you hold tube against ground glass; screw in and out until you see the surface of the ground glass; then focus the image by turning pinion connected with achromatic lens.

The umbrella stand is made of six pieces of mandril tube the following lengths and diameters:—Obtain three pieces of best brass tubing about 28 in. long and  $\frac{1}{2}$  in. diameter outside measurement; then three pieces 29 in. long to fit easily into the first series; also three pieces to fit tight over small tubing, and to push tightly into large tubes. These should be 4 in. long, and are to be soldered over one end of small size tubes, thus allowing small tubes to be put into large tubes either way. A small ring is soldered around the middle of these short pieces of tube to prevent the tubes pushing too far into large tubes when stand is in use, and also when closed up. The tops of large tubes

have soldered into them a plug of metal, which is made into a joint by fitting into the casting which holds camera plate. This casting is about  $1\frac{1}{2}$  in. diameter, having a peg in centre to be screwed for holding camera, and three projections to fit into castings of tubes. The castings in tops of tubes are filed out, and the projection on top casting is ground into this space, into which it is fixed, when finished, by a pin or screw going through the whole. The bottoms of short tubes have a piece of metal soldered into them, and filed down to a point to stand in ground. A handle is made, and a piece of tubing flattened slightly on three sides to form the bottom, when packed, completes the whole. A cover can be made of silk or patent leather to suit the taste of the possessor.

### PHOTOGRAPHING THE INTERIOR OF A WRECK.

THERE are few professions which more frequently call for ingenuity, and tax resource, than that of the photographer in general practice. He must be ready for any emergency, and be prepared to photograph everything possessing an objective existence which interests humanity. Mr. J. L. Gihon a while ago described, in our Philadelphia contemporary, a curious undertaking which may be interesting to our readers. The gentleman in question is engaged in photography in South America, and was called upon to photograph the interior of a vessel which had been found wrecked and deserted. He says:—

“When found drifting with the current along the coast, her interior was a mass of smouldering fire, but her hull, being of metal, merely glowed as only red-hot iron can. Speculation was rife as to what had become of the officers and crew, until they made their appearance in the city, after having trudged through many a weary league of sand. They told us of the fire which suddenly burst upon them, of their well-grounded fears of the explosion which they knew must follow (powder being aboard), of their abandonment of the vessel, of their precarious search for land, and of their after hardships. They were surprised to find that the remnants of their once beautiful craft had arrived in advance, and now began a disputation as to whom they should revert. Again, the underwriters in London had to be satisfied as to the condition of the wreck. A rational man suggested that as to the latter, a photograph of the interior would be the best report that could possibly be devised. Thus our connection with the affair commenced.

“I have worked under difficulties many a time, but have never yet encountered greater ones than this offered. The captain must have been a practical joker, for he assured me that I would suffer no inconvenience, that there was plenty of fresh water on board, and several state-rooms sufficiently dark for manipulation. As he professed to have been an amateur photographer, I had confidence in his statements, and, to my after disgust, abided by them.

“Starting off in one of the little sail boats that constantly hover about the moles, we soon get upon the bosom of the harbour, and as the wind freshens, ship just enough of the sea to completely drench all of the luggage. You know what the result will be—swelled apparatus, and chloride of silver wherever the nitrate has been. At last we reach the scared and disabled ship, and find no way of getting on board. A grapnel, however, skilfully thrown, attaches itself to the bulwarks, and gives us a chance to clamber up and over the sides, where we find no deck to stand upon. An immense shell filled with débris, with twisted beams, with immense links of chain, rusted anchors, broken machinery, sections of tubular masts, knotted coils of wire rope—all this, and more, similar in character—make up the scene we are to represent. Nothing daunted, ingenuity has to be taxed to get the traps on board, and to establish a place for them.



"It needs no scrutiny to establish the irony of the captain's remarks concerning the rooms. There remains to us the necessity for working, and there looms upon us the fact that there is no place for the purpose. Hesitation is useless, and as all that remains about us is of iron, we proceed to make use of it, and actually build a dark room, or rather kennel, out of great sheets, that have to be lugged from various parts of the piled up rubbish. Of course it is not light-tight, so we strip off coats and vests, and all that decency will allow, and cover over cracks, fill up corners, and succeed in having created a stinking, nasty, dirty hole, into which we have to crawl, and out of which we return thanks for the privilege of getting. And now for the water! To be sure, there is plenty around us, but it is as the old poem reminds us, "Water, water everywhere, but not a drop to drink," and, as we revise it, not a drop with which to wash. Diligent search, though, reveals the tops of iron tanks amidst the chaos, and in the bottoms of them we discover sufficient if we can get it. More impromptu mechanical devices come to our aid, and we finally commence work.

"It would be tedious to recapitulate the obstacles that obtrude themselves at every step, but they can be imagined when I explain that we were working 14x17 inch plates; that there was a heavy wind blowing; that the vessel itself had some motion; that there was no proper support for the camera; and that it would be impossible to suggest any one point that a photographer could look upon as conducive to either comfort or convenience. A successful negative ultimately crowning our efforts must be looked upon as the gaining of a genuine triumph."

### OUT-DOOR PHOTOGRAPHY.

BY GEORGE WASHINGTON WILSON.

[MR. WILSON has prepared for American circulation a little work entitled *Wilson's Landscape Studies*, from which the following is an extract.]

My success is due to care, and I have used the following formula for ten years:—

**Bath.**—Ordinary 30-grain bath of nitrate of silver, without anything added to it, except about four grains of iodide of potassium to every sixteen ounces.

**Collodion.**—As I never could make it to please myself, I always buy it from some respectable maker.

**Glass.**—In the long run it is cheaper to have first quality glass, and I pay something extra to have it packed with a piece of paper between each plate, to prevent the surfaces being scratched during transit.

**Developer.**—Glacial acetic acid ... 1 ounce  
Water ... 16 ounces  
Protosulphate of iron 15 to 30 grains  
to the ounce of solution.

The proportions require to be varied so much according to circumstances, that it is impossible to give them exact. With a little practice, one soon learns to regulate the strength of the iron and acid to suit the work in hand. In warm weather I dilute the developer immediately before using it; consequently can carry in one bottle as much as, when diluted, would make two.

**Lenses.**—I use, for full-sized plates, a triplet of about 8-inch focus, a pair of view lenses, single meniscus, 8-inch focus, one pair 6-inch, one pair 4½-inch, one pair doublets 3½-inch, and one pair doublets 2½-inch.

**Exposure, &c.**—If it is a subject we are attempting which can be taken instantaneously, I use my six-inch focus lenses with a five-eighth inch stop, and expose by removing and replacing the cap of the lens as quickly as possible; but if it is a subject requiring a long exposure, I make a guess for the first plate, and, from long habit, generally succeed in hitting it pretty exactly.

Some days, when, owing to the variation of the intensity of the light on the amount of shadow in the views, I have begun in the morning with an exposure of ten seconds, I have ended in the afternoon with one of three minutes, without losing a plate from either over or under exposure during the day. In spring the actinic property of light appears to be very active, and it is only then that I have succeeded in getting passable instantaneous pictures. Early in the season, views of buildings may be taken with a small stop, in from two to ten seconds, and landscapes, with trees, in from five to fifteen seconds; but by the month of August and September I find from thirty to sixty-six seconds are required for most landscape views, and instantaneous exposures are of no use except for clouds and water only.

The plate being exposed, I get myself shut up in the tent, and develop in the usual way by dashing on the solution as quickly as possible, and moving about the plate to prevent stains. If it is an instantaneous view, all the details should come up slowly and distinctly; but I keep on moving the plate for two or three minutes so as to get all that I can up before washing off the developer. This I do carefully and slowly, and as the negative, in this stage, is very thin in deposit, I pour from my dropping bottle a small stream of nitrate of silver along the side of the plate, and let it flow over the whole surface, before dashing on a fresh dose of developing solution, keeping the plate moving as usual. When this has acted for a minute or so, I wash it off again very carefully, and repeat the process—sometimes three or four times if necessary—until the requisite printing density is attained; then, after a slight washing, I bring it outside the tent, wash thoroughly, and fix with cyanide of potassium. If the plate has had a long exposure, with a small stop, I find one redevelopment generally enough; but if my plate looks too thin after fixing, I sometimes take it into the tent and redevelop a second time. The cyanide, however, must be well washed off, otherwise there is danger of getting a reddish deposit upon the shadows.

**Printing.**—I am not aware that there is anything peculiar in my printing operations, but I may mention that I use what some people consider a weak bath: twenty-five to thirty-five grains of nitrate of silver to the ounce of water, and the solution made neutral with a few drops of ammonia. After the prints are fixed in hyposulphite of soda, they are put up in bundles of about fifty, and subjected to the pressure of a machine, acting on the principle of a screw-press, which squeezes most of the liquid out of them. They are then washed by throwing them separately from one dish of clean water into another several times, and again subjected to pressure; and I believe that, after a few repetitions of this process, they are as free from hyposulphite of soda as it is possible for prints to be; but I generally allow them to swell in porcelain dishes, with syphons, which empty and fill mechanically all night.

### ON DUPLEX IMAGES.

BY W. H. WARNER.\*

The negative now brought to your notice is that of the parish church of Denbigh, North Wales, called "Eglwys Wen," or "White Church," in which the two east windows face you as you enter, the western wall at your back being very uneven as regards surface, and of a dirty yellow colour.

On placing the camera in position no image was observable; yet, on completion of exposure—twice, on two separate occasions—the two east windows, the one plainer than the other, appeared in an inverted form as floating in the air between the pews and the camera. At length, on a third trial, a picture was obtained without it.

\* A communication to the Liverpool Amateur Photographic Association.



And now to describe the conditions under which the first two were taken, of which one negative is before you.

First, as to the light. The time selected was from ten to twelve on a dull day. After the strong light had ceased to pour in from the eastern windows—and the side light was stronger than the front, in order the better to ensure the having of only the light from the object itself—the camera was placed *behind* the half open door. A five and a quarter inch wide-angle rectilinear lens by Dallmeyer, with open aperture, was used on the occasion. The exposure, in the two first instances, was 105 minutes, the windows on the south of the church being old and yellow. You will see the result.

The perfect negative was obtained under slightly different conditions. The time selected was a bright afternoon from two to four, the sun being then more westerly, leaving the east end in a comparatively dull light. The door of the church was placed wide open, and the camera, with a five and a-quarter single wide-angle landscape lens, by Dallmeyer, with a nine by seven plate, was exposed forty-five minutes, standing in the diffused light. No spirit image appeared. The negative was clean, and free from stains. Half-an-hour after this development, when the bright light in the south-west had subsided, and the eastern sky, from refraction from the western, was brightening, the inverted image of the window was seen making its appearance in the old place, and, on closing the door of the church, it became stronger. I can only account for it thus:—That the western wall at my back acted in the same way as a pad of red blotting-paper at the back of a sensitised plate, the air between it and the pews being a focussing-screen; that when the direct light was greater than the diffused, the image appeared, and *vice versa*. The church is a very cold and damp one, being thus favourable to such a state of things, and conducting highly to the sensitiveness of the plate, that of forty-five minutes' exposure not being stained in the least. Damp atmospheres have, I think, an inducement to such appearances.

After a storm of rain, in photographing the north transept of Tintern Abbey, I obtained the mullions of a window situate high up in the gable, and also the five mullions of the western window, both being reflected apparently on the ground a short distance in front of the subjects. The latter picture was largely bought by an American medium to support his theory of the spirits of nuns appearing in the Holy Abbey. Opposite to each of these windows was a mass of air, with trees and cliffs at the immediate background, similar, as regards photo-colour, to that of the western wall of the church.

## Recent Patents.

### PHOTO BLOCK PRINTING

BY WALTER WOODBURY.

THE following invention was only provisionally specified. It consists in an application of the photo-relief process to the production of blocks for surface-printing. It is as follows:—

"Firstly. To a method of obtaining by photography blocks suitable for employing with type, in the ordinary method of typographic printing, either from a subject represented by lines as an engraving or wood-cut, or from a photograph containing only half-tones, as a portrait or landscape from nature or a painting.

"Secondly, to improvements in the process known and termed in the trade 'Woodburytype,' by which that process is rendered much simpler.

"Thirdly, to an improved method of producing the same by machinery.

"To accomplish the first part of my invention I proceed as

follows:—Where the subject is in line I make a positive photograph of it (*i. e.*, positive by transmitted light), and from this I obtain a relief in gelatine by the ordinary method, the result being that the hollows of the relief will all be of one uniform depth, this characteristic producing a level or uniform surface in the resulting mould, which I make by impressing this relief into metal by hydraulic or other pressure, or by the method stated in the second part of this invention. Where the subject is in half-tone, as in a photograph from nature, I proceed as follows:—In printing on the gelatine film I interpose between it and the negative a photograph, on mica or transparent collodion, of what is known as mosquito netting, or Brussels net, which breaks up the resulting relief into a multitude of fine square or hexagonal lines. To obtain from this a printing block I employ the means already described, the resulting block in soft metal being capable of giving from one hundred to two hundred impressions; but where large numbers are wanted, I electotype this block in the ordinary way. I use diffused light to produce the block from half-tone negatives, as in that case the light in the parts that represent the whites creeps around the lines, thus obliterating them in that part, and leaving them strongest only in the parts printing dark. I sometimes adopt another method. I take a negative of the network by transmitted light, and copy this together with the negative, thus producing a positive with the lines already thereon, from which I proceed to make a relief as stated.

"To accomplish the second part of my invention I proceed as follows:—In place of using a thin film of collodion (as is generally used in the process called 'Woodburytype') to hold the gelatine of the relief, I proceed as follows:—I first rub over a sheet of plate glass with French chalk or ox-gall, and then coat with the bichromatized gelatine solution as now used. When this is dried and ready for use, I expose the side that was next to the glass for a few seconds to daylight before exposing it under the negative. This has the effect of causing a thin film of the gelatine to become insoluble, which, after subsequent exposure under the negative, will not wash away, but form a support for the photographic image afterwards impressed, thus doing away with the expense and trouble of the double coatings as now practised. When the gelatine relief is dried in the ordinary way, I take a thin sheet of tinfoil (same size as the gelatine relief), and attach it by gum or other adhesive substance around the edges to the gelatine relief. I now lay on the back of this a stout sheet of plate paper, and pass the whole through an ordinary rolling press; the tinfoil is by this means impressed into all the details of the relief; but in that state it would be useless to print from. I then proceed as follows:—A shallow metal box is filled with a composition of shellac and asphalt, which, on warming, becomes soft, but hardens on cooling. This box is placed on a hot plate until the composition it contains softens; it is then placed on the lower plate of the ordinary Woodbury printing-press, the foil and relief laid on it, the press closed, and the pressure applied by the under screw. When the composition has hardened, the tinfoil adheres to it, and I remove the gelatine relief from the foil, and use the foil-backed mould to print from. In place of fixing the proofs by alum or other substance of a like nature, I varnish the proofs with an ordinary varnish composed of shellac and alcohol, which gives the print the effect of a photograph on albumenized paper, at the same time protecting the surface from moisture. I also sometimes use the composition melted in boxes without the foil as a printing mould direct, and when sufficient numbers have been printed the box holding the composition is again heated, and can be used over and over again.

"The third part of my invention consists in an improved method of printing 'Woodburytype' by machinery. This I accomplish as follows:—Out of a solid block of iron I have turned a cylindrical hole in which is made to fit very loosely a cylinder of soft metal having a taper or conical hole through it lengthwise. Between the interior of the steel block and the soft metal cylinder I insert the gelatine reliefs, then by means of a taper or wedge-shaped spindle (roughened) I drive, by hammering or by pressure, the soft metal against the iron cylinder, thus impressing the relief on the outside of the metal cylinder, the taper spindle at the same time forming a shaft for the cylinder to be used in the process of printing. I then mount this roller bearing the relief in vertical slots in a frame having a bed of plate glass on which the paper rests, the roller resting on the glass by its own weight, and being dragged round by the paper itself; or in place of the glass plate I allow the soft metal cylinder to lie on another fixed or movable roller of metal or glass. The latter may be hollow, so as to reduce its temperature in hot weather by a stream of cold water running through it."



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## THE HEALTH OF PHOTOGRAPHERS.

EVERY practical photographer will read the articles of Dr. Napias upon the practice of photography in its relation to health, the conclusion of which we publish this week, with deep interest. "There is nothing in the photographer's calling," he observes, "really injurious to health or life." The valetudinary photographer who suffers from headache, depression, irregular appetite, and general debility, and feels disposed to charge these and many other uncomfortable symptoms to the hot and close atmosphere, in which he spends many hours daily, and to the chemicals he breathes or absorbs, will read with satisfaction this dictum of a medical man who has for some time made a special study of the health of photographers. Possibly, in some cases, a little scepticism will be mingled with the satisfaction; for whilst the practice of photography need not be unhealthy, there cannot be a doubt that it is often conducted under conditions that are very trying to many constitutions. The operator who passes many hours daily in the tropical temperature of a glass room; or in the dark-room, often unventilated, reeking with the mingled fumes of ether, alcohol, acetic acid, cyanide, decomposing hyposulphite, and often a variety of other chemicals, the debris of experimental work, unnecessary, unused, but stored on the dark-room shelves, is unquestionably subject to conditions more detrimental to health than those whose duties permit them to breathe fresh air whilst earning their daily bread. There are other conditions in the working photographer's life which are at times detrimental to the maintenance of sound health. Dr. Napias, indeed, admits these conditions in pointing out the best remedies for the disabilities to which the photographer is subject in breathing the ether-laden atmosphere of the dark-room, and for the gradual absorption or accidental swallowing of the poisons with which he works. In calling attention to these articles, we wish briefly to supplement some of the suggestions they contain.

There are two conditions of health of the most vital importance, which are, unfortunately, most constantly overlooked or neglected, and to which Dr. Napias has scarcely referred in his articles: we refer to ventilation and regularity in diet. The glass-room itself is often very insufficiently ventilated, and its heat is oppressive to the sitter who visits it for even a quarter of an hour. But it is to the ventilation of the dark-room we especially refer, which is too often of the most imperfect and inoperative character. The ordinary means of ventilation secured by opening windows are, of course, not available during the many hours in which the operator in a busy establishment is engaged therein; and as special means are often

neglected, the majority of dark-rooms are offensive and unwholesome in greater or less degree. Special appliances are necessary to keep a dark-room well ventilated; but these, various in kind, are generally simple and easy to apply. As air will travel in any direction, and round any number of corners, and light only travels in straight lines, it is not difficult to admit air without admitting light, and we need not discuss the various mechanical appliances for effecting the purpose here. One thing only it may be needful to recall to the minds of photographers here: the vapours of ether, which are generally most prevalent in the dark-room, and have the most potent effect on the nervous system, are heavier than the atmosphere, and fall downwards; hence, to get effectually rid of them, there should be some aperture or apertures to permit them to pass out at the floor. If a good current of fresh air can be arranged to enter the room near the operator's face, and pass out near his feet, the most perfect and wholesome ventilation will be secured. Such ventilation is of vital importance to health; and by securing health and comfort it aids in securing more perfect results. If the dark-room be large and well lighted, and if all unnecessary bottles, vessels, chemicals, and rubbish be carefully banished from it, both comfort and health will be further secured. It is scarcely necessary to add, that an hour's brisk walk in the fresh air after a few hours in the dark-room will ventilate the photographer's clothing, and ventilate and purify his lungs most beneficially.

Another point very difficult to deal with is the question of taking food during the busy hours of daylight. Many photographers who are masters of themselves, and owe obedience to no law but that of making hay whilst the sun shines, neglect to take food during the busy bright hours, from nine in the morning until five or six in the evening. In some houses there is no definite provision for assistants taking a mid-day meal. This long fasting, or uncertain and irregular opportunities of eating, whether voluntarily undertaken or at the command of an employer, is unquestionably, in many cases, most injurious. A person of vigorous constitution and healthy habits may fast eight hours without discomfort or injury; but to the person of feeble constitution, and of the dyspeptic tendency which is frequently the result of sedentary and absorbing occupation, regularity in taking food at moderate intervals is imperative to health. Long fasting in a vitiated atmosphere, engaged in an occupation which keeps the nervous system at full tension, produces exhaustion, and incapacity for taking simple, wholesome food, and incapacity for digesting the food when taken; and also produces at the same time a desire for some kind of stimulant which shall temporarily revive the jaded system; and this mode of life persisted in generally brings, sooner or later, broken health. We strongly commend all photographers who are themselves masters of their time to secure at least half an hour, or more if possible, for rest and food about one o'clock every day; and we strongly urge employers who do not already concede a period for dinner to afford a like time to all in their employment. In some large establishments we know this is already done; but in others we know the time for mid-day refreshment is furtively snatched, such cessation from mid-day work not being recognized by the principals. Even where a number of young ladies are employed, less able than men to bear the prolonged fast, we have heard of cases where a surreptitiously eaten bun or sandwich was the only substitute for dinner they could obtain between nine in the morning and six in the evening.

We shall add no comment upon the admirable summary of the toxic effects of various chemicals found in daily use by the photographer, and the remedies Dr. Napias suggests for their effects, either absorbed by the skin or the lungs, or swallowed, beyond once more urging photographers to banish the dangerous cyanide from their premises.



## REPRODUCING NEGATIVES BY THE POWDER PROCESS.

A FEW more suggestions, chiefly based upon the practical demonstration recently given by Mr. Wratten at the South London Society, may be interesting to many of our readers. A point of considerable importance, materially influencing not merely comfort, but success, in working, is an operating room free from draughts, and with a moderately dry atmosphere. The very quality upon which the process is based consists in the sensitively hygrometric condition of the film upon which the image is produced. A draught of damp air passing over the plate will materially modify, at once, those conditions which the operator should have strictly under his control. The room being free from draughts, and not too damp, the operator can at will modify the condition of the film, by very gently blowing upon it; but unless the atmosphere be very dry, and the film insufficiently adhesive to hold the powdered graphite, this will rarely be required.

The syrupy film, it should be borne in mind, must be quite dry before it is exposed under the negative. The contrivance used by Mr. Wratten to secure even drying was very useful, and the best plan we know of drying a plate in the absence of a bright fire. It consists of a tin vessel, something like a dipping bath, which is filled with water, placed on a stand at a slight inclination, and the flame of a spirit lamp placed, underneath it to heat the water. The plate is laid on the flat side, resting on a ledge, and is thus warmed evenly all over, without the risk of cracking, which the direct application of a flame to the back of the plate inevitably involves. Experience will soon enable the operator to determine when the plate is ready for exposure under the negative; of course, anything like moisture or tackiness must be removed, or the film might adhere to the negative; but when dry it may with advantage be exposed under the negative whilst still warm.

The exposure must depend, of course, on the density of the negative and the strength of the light. Those who possess a magnesium lamp will find a great advantage in its use, as affording a light of constant intensity; the number of feet of the wire found necessary for one experiment serving, within the varying limits determined by varying intensities, for all. Mr. Wratten used at the South London demonstration three feet of wire, about equivalent, as he estimated, to five minutes of diffused daylight. By under-exposure, an image is obtained which too readily takes the powder, burying the detail in the shadows, and which when printed would yield a flat white image. Over-exposure also yields a flat negative, giving a print with excess of shadow. A pale brown visible image is formed on the film, in which, when opal glass is used for supporting the film, the picture in full detail may be clearly seen. The advantage of opal glass is found in developing the image by means of the powdered plumbago, the progress of the work being much better seen on the white surface. Some difficulty was mentioned, at the South London meeting, in obtaining opal glass sufficiently flat to be used for printing without loss of sharpness and without risk to the negative. The glass known as "patent plate" opal is free from all objection of this kind.

The development of the image by applying the powder is an operation requiring care, patience, judgment, and delicacy of touch. The plumbago should be ground especially fine, and sifted, to remove any trace of grit or coarse particles. Mr. Wratten stated that his was that which is prepared for use in electrotyping, in the state of an absolutely impalpable powder. Mr. Howard had succeeded with the lead removed from a lead pencil thoroughly pounded in a mortar. A large camel's hair brush is used for applying the powder, which is done by gently rubbing it on the surface. If a drag of the brush is felt against the surface, there is too much moisture in the atmosphere; or it may be that the plate has been

insufficiently exposed. If it be from excess of moisture in the atmosphere, the plate may be dried again with gentle heat. If the plumbago does not adhere sufficiently readily, gently blowing on the plate may improve the conditions. Steady application of the powder, gently and patiently, sometimes for five or ten minutes, will gradually bring up the image to the required intensity.

Various formula for hygrometric mixture have been published and advocated. In the earliest formula of the kind, that used by MM. Salmon and Garnier in a powder carbon process, a solution of white sugar, albumen, and bichromate of ammonia was used. Joubert, in his enamel process, used a similar preparation, substituting honey for sugar. In Leth's enamelling process a solution of gum-arabic, honey, and bichromate were employed. Herr Obernetter and Mr. Woodbury each use a different solution, formulæ of which we have recently published. Mr. Wratten's preparation appeared to answer admirably. We repeat details, to facilitate reference, here:—

Dextrine	...	...	...	...	1 ounce
Grape sugar	...	...	...	...	"
Bichromate of ammonia	...	...	...	...	"
Water	...	...	...	...	10 ounces.

Almost any salt of chromic acid, or chromic acid itself, may be employed for rendering the syrup sensitive. Bichromate of ammonia possesses advantages in ready solubility, and in conferring the greatest sensitiveness; but as it is much dearer than bichromate of potash, many photographers prefer the latter. Bichromate of potash is soluble in ten parts of water; bichromate of ammonia in four parts of water. A neutral chromate, which we recommended in our work on pigment printing half-a-dozen years ago, is very convenient; it is formed by neutralizing a saturated solution of bichromate of potash with liquid ammonia.

The transfer of the film is a comparatively easy matter. Where a reversed negative is required, as in some of the carbon and mechanical printing processes, transfer is not absolutely necessary, and the negative may be finished on glass upon which it has been produced by simply washing to remove the bichromate, and varnishing. But even in such cases transfer is, we think, wise; and if the plate be coated with collodion first, and again with collodion after development, it may be preserved in this way, and used on either side, without transferring to a glass support. The completely developed negative is coated with a tough plain collodion, and placed in a dish of water, which serves the double purpose of washing away the unchanged bichromate, and loosening the film. Should the collodion employed be of a somewhat adherent nature, a few drops of sulphuric acid, or a few grains of citric acid added to the water, will aid the loosening of the film, which, by neat manipulation, may be transferred from the water to some flat surface to dry, or to another glass if it be intended to use glass again for its support. In the latter case, where the negative is to be reversed, it is found to adhere better to the fresh plate if it be floated for a few moments on a fifty-grain solution of sugar.

Besides the mere duplication of negatives, this process has many applications. As Mr. Woodbury pointed out in a recent article, it is valuable as a special means of strengthening ordinary negatives. As we pointed out, it is the simplest method of producing duplicate negatives of special character for printing from two negatives at once; or, as in Mr. Edward's practice, it may be used to repeat the negative at the back of the original image. As a means of producing enlarged negatives direct, without the intervention of a transparency, it is clear it may be found very useful, fifteen minutes of ordinary daylight having been found in Mr. Wratten's experience sufficient exposure in such case. For reproducing transparencies it offers many advantages, and leaves the tone or colour almost entirely in the operator's hands. What other application it may have remains to be seen.



## FRENCH CORRESPONDENCE.

THE FRENCH PHOTOGRAPHIC SOCIETY—REMOVING VARNISH AND NEGATIVE FILMS—ACTION OF LIGHT ON BICHROMATED GELATINE—SCIENTIFIC PHOTOGRAPHY—PHOTOGRAPHIC SANITATION.

THE French Photographic Society held a meeting on the 3rd July, but the heat was so great, and the attendance of members so scanty, that it was decided to adjourn, after a little while, over the usual vacation. The rooms of the society are, unfortunately, ill-suited to its requirements, and it is of urgent necessity that some alterations be made forthwith. The report of the jury of the exhibition was read; and while on this subject I would crave permission to reply in a few words to the letter signed "N." which appeared in the last number of the PHOTOGRAPHIC NEWS. Your esteemed correspondent reproaches me for having expressed too much satisfaction upon the liberal distribution of medals made to exhibitors. I think that if he had paid a visit to the exhibition in question he would have shared my opinion upon the great value of most of the works there collected together. In according seventy-four awards to the eighty-four exhibitors the jury had even to express their regret in having to exclude ten from sharing the honours. A critic cannot do less than bear testimony to the zeal with which everybody has worked to achieve success, and I do not see that the unusually large number of works of value can in any way depreciate their respective merits. All the better for the exhibitors and for the photographic art, for the works are homage paid to the great cause of progress. I will here repeat what I have said on the subject elsewhere: when, in time of war, a regiment especially distinguishes itself, it is honoured and "decorated," as a whole, by attaching to its flag the cross of honour, so that injustice may be done to no one.

Among the few communications made on Friday last to the society there was one of great practical interest, and easy of appreciation. It was a process for removing the varnish and the negative film from glass plates, and was described by M. Rousselon, who has employed it successfully for a long time. He dissolves eight grammes of caustic potash and four decigrammes of carbonate of potash in one hundred and seventy cubic centimetres of distilled water, and pours into this solution five hundred cubic centimetres of alcohol at 40°. Lac varnish is removed with ease by means of this liquid, Soehnée varnish and some other special ones requiring a little more potash. When the cliché has been totally denuded of varnish, it is washed, and plunged at once into a bath of distilled water containing about two per cent. of hydrochloric acid, the plate being withdrawn as soon as one or other of the corners shows signs of rising, and is then placed to drain. As soon as the cliché is perfectly dry it is placed in contact with steam until entirely covered with drops of condensed moisture, and then there is poured upon it a slight film of the following preparation:—One hundred grammes of gelatine are dissolved in seven hundred grammes of distilled water, and to this are added (in summer) nineteen grammes of glycerine, and in winter rather less. As soon as the materials are thoroughly dissolved, ten cubic centimetres of a ten per cent. solution of chrome alum for every hundred grammes of gelatine are added. The cliché is then allowed to dry completely, after which it is covered with normal collodion prepared with castor oil. The film is again dried, and then the margins are cut with a pen-knife, and the pellicle removed from the glass.

M. Gobert, who has just returned from England, gave some account of a visit he paid to the photographic studios at the Arsenal at Woolwich, in charge of Mr. Baden Pritchard, and exhibited to the members of the society, by whom they were much admired, several carbon prints produced in these departments. In regard to these pictures, the discussion was revived, which took place some

months ago, relative to the continued action of the light upon a bichromated gelatine film after this has once been exposed to the action of the solar rays. Many gentlemen in this country, especially MM. Rousselon, Andra, and Gobert, have experimented in the matter, but without securing the results claimed by English experimenters. As it never entered our minds, in this country, to doubt the statements made by MM. Abney, Baden Pritchard, and others, it is believed that the conditions under which these gentlemen operate differ materially from those of French operators. It would be interesting to know something more of the matter, and I would ask one of these gentlemen to be good enough to favour me with a communication on the subject for insertion in the *Moniteur de la Photographie*, so that the question may be fully discussed.

M. Janssen, who has been charged by the Academy of Sciences to direct the expedition to Japan to observe the approaching transit of Venus, has not been simply content with one of the apparatus supplied by the Official Commission to all officers sent out by them to different parts of the globe, but has constructed, besides, a special instrument which will permit him to obtain photographs similar to those secured by observers of other nations, who have all adopted a system to obtain large images. This apparatus, of which every part has been scientifically considered, and with the greatest care, has an aperture of five inches, and a focus of two metres. It gives very clear images, of which M. Janssen has presented several specimens to the Academy at its last sitting, where they were greatly admired. On this occasion M. Janssen pointed out the important service that photography can render to astronomy; and among other things he stated that the daily depiction of the sun's disc was of considerable value, as showing the changes undergone by the orb which carries within it the physical secrets of our own system. M. Janssen is so convinced of the valuable aid which photography may render to the science of photography, that he regrets sincerely to see the applications of the new art so much neglected in France. We are, in fact, behind other nations in this respect, although, in 1858, M. Faye presented to the Academy a fine picture of the eclipse of the sun that took place on the 19th March of that year, and which, at the time, caused a great sensation in the scientific world. But it is foreign nations who have profited by the example of our countrymen. The works of Dr. Warren de la Rue are too well known by the readers of this journal to render it necessary for me to refer to them here; and as to those of Mr. Rutherford, of New York, they prove that in America scientific photography is not forgotten. In Germany, in Russia, and in Italy, astronomical photography has also made progress. Let us hope that, thanks to the efforts of MM. Faye and Janssen, and of those gentlemen aiding in the observations of the transit of Venus, the study of this branch of photography in France will receive fresh impetus.

English photographers have doubtless not yet forgotten the name of Camille Silvy, who, having practised photography in France with great success as an amateur, founded some time ago in London a photographic studio, which became one of the most important in the metropolis. Now I have just received from M. Silvy a letter which proves amply the public utility of the paper recently published by Dr. Henri Napias upon "Photography from a Sanitary Point of View." M. Silvy tells me that "he was, and is still, the victim of cyanide of potassium." He employed the compound in immoderate quantities to wash his hands and arms for several years; he has even swallowed little doses of it, involuntarily—when, for instance, he has touched food and fruit with his hands previously soiled with cyanide. If I do not mistake, it is more than four years since M. Silvy gave up photography, and yet he is to this day under treatment from the effects of this dangerous compound. This is a sad example to



add to the many cases of the kind which have already come under my observation. I cannot urge photographers too much to read carefully Dr. Napias's paper, and to follow the advice he gives for preventing and remedying accidents, and to bear in mind his clear and precise prescriptions.

ERNEST LACAN.

### SUGGESTIONS FOR RAISING THE STATUS OF PHOTOGRAPHY GENERALLY THROUGHOUT THE UNITED KINGDOM.

BY GEORGE HOOPER.

I BEG to submit the following brief suggestions to all interested in our art, as means whereby the status of photography may be raised in public estimation, and new interest given to the practice of the art, alike to amateur and professional photographers. My remarks merely contain the skeleton of a plan, but they may possibly be sufficiently suggestive to induce practical men to aid in giving the dry bones vitality and usefulness.

During the term of the forthcoming exhibition, let a special conference of photographers be held to decide upon the best means to be used to further the above object.

The executive of all the provincial societies shall be invited to meet the council of the Photographic Society of Great Britain, to discuss the following points, and frame resolutions to be passed at the above conference.

1. That for the general advancement of the art, it is desirable to secure the united action of all the societies in the kingdom, and that the Photographic Society of Great Britain shall be considered the central society, from which all such united action must emanate.

2. That all the societies in the kingdom shall arrange to hold their eight monthly meetings during the same eight months of the year: that all the provincial societies' meetings shall be held during the first week of such eight months, and those of the central society, as usual, on the second Tuesday of such eight months.

3. That the transactions of all the societies shall be published in the Journal of the Photographic Society of Great Britain, and that this journal shall be considered as the official organ of all the societies in the kingdom. A copy of same shall be sent to every member free, each society contributing its portion towards the extra expense so incurred.

4. That an exhibition of the progress of the art shall be held every year, but not necessarily in London. That it shall be opened by a soirée, and, if possible, some royal or distinguished personage shall be present.

5. That, if practicable, the next annual exhibition shall be held at Edinburgh, and the executive of the Edinburgh Society and that of the Central Society shall unite in forming a deputation to request the Lord Provost of Edinburgh to open same, and shall further use every means to obtain, if possible, a visit by Her Majesty the Queen.

6. Admission shall be charged to all non-members of societies, and every exhibition made self-supporting.

7. That a conference of photographers be held annually, during the month and in the town selected for the exhibition, such conference to last one, two, or three days, according to arrangements with the general executive.

8. A medal shall be awarded for any new discovery in connection with the art.

9. Any complaints shall be sent in to the general executive, and disputes submitted and settled by arbitration.

10. Any surplus funds from exhibitions or general contributions shall be placed in the hands of the treasurer of the general executive.

### PHOTOGRAPHY FROM A SANITARY POINT OF VIEW.

BY DR. H. NAPIAS.\*

*Nitrate of Silver.*—Nitrate of silver, so constantly employed in photography, is a violent caustic, the employment of which is not unattended by danger. Its local external action is generally confined to the production upon the skin of brown patches which speedily become black. These spots disappear at the end of some days by abrasion of the cuticle, but they may be artificially removed by repeated washing in dilute nitric acid or iodide of potassium. These are methods which take time, and only partially succeed, but cyanide of potassium, on the other hand, very quickly removes the marks. The employment of cyanide, however, although the most effective plan of getting rid of the black stains, is attended by grave dangers, and we need not repeat what we have previously said on the subject. Taken internally, nitrate of silver is an irritant and very energetic poison. This fact deserves to be known, although cases of poisoning by its means are rare, the best antidote that can be employed under the circumstances being common salt or chloride of sodium. A glass of water containing a good pinch of salt, or a cup of broth highly salted, contributes much to allay the injurious effects of this dangerous poison.

*Bichromate of Potash.*—This salt, the employment of which is every day becoming more common in photography, whether for the purpose of carbon printing or the production of certain enamels, is far from being innocuous to health. Its local action sets up an irritation which first becomes manifest upon healthy skin by an eruption of a pustulous character. Its action is favoured by scratches or chaps upon the hands of the operator, for bichromate of potash will enter the smallest wound, and the slightest abrasion of the skin will lead to ulceration, which rapidly spreads, and refuses to answer to any kind of treatment. Pustules, ulcerations, and such like wounds are not rare with those who work much with bichromate of potash. Moreover, the compound, in fine dust, if breathed with the atmosphere of the apartment, gives rise to inflammation of the mouth and stubborn colds in the head, which, if repeated, frequently end by bringing about, after a time, a special, characteristic lesion. The perforation of the diaphragm of the nose, by means of a fistulous communication between the nostrils, also arises.

Photographic operators who have to manipulate bichromate of potash do not employ it so frequently, or for a period sufficiently prolonged to give rise to grave accidents. Nevertheless, its use may bring with it colds in the head and inflammation of the eyes and eyelids, as happened in a recent case where a man was in the habit of carrying his hand to his eyes after having handled crystals of the salts.

To prevent inflammatory actions of this kind, it is well, every time bichromate of potash is used, to wash the hands, face, eyes, mouth, and nostrils with water very thoroughly.

The action of bichromate of potash taken internally is that of an irritant and violent poison. Poisoning by this salt is characterised by inflammation, or even cauterization of the mucous membrane of the mouth, throat, and stomach, giving rise to painful cramps and to vomiting, often mixed with blood. Absorbed and carried into the circulation, it renders respiration difficult, brings about chilliness in the hands and feet, accompanied by diarrhoea and choleraic symptoms. After a time an intoxication sets in, with more or less complete paralysis of the limbs, during which death supervenes.

If any accident takes place from the use of bichromate of potash, or any attempt at suicide, the patient should be given at once, without awaiting the arrival of a medical man, a dose of lime water mixed with albumen. At the



same time warmth should be restored to the body by vigorous friction of the arms and legs, using, for rubbing the limbs with, alcohol mixed with ammonia in the proportion of five grammes of ammonia to one hundred grammes of alcohol.

*Bichloride of Mercury.*—Bichloride of mercury is still known under its old name of corrosive sublimate, by reason of its violent corrosive action. It may be rarely used in photography now-a-days, but, at any rate, it is employed often enough to make it worth while to put operators on their guard who may have anything to do with it. A solution of bichloride in contact with a broken skin brings about a sort of local gangrene, which attacks the tissue very severely. Absorbed through a healthy or ulcerous skin, it may cause abnormal secretion of the saliva, accompanied by a softening, swelling, and ulceration of the gums, and noisome breath. In these cases it is well to employ chlorate of potash dissolved in water, which is used either as a lotion for the wounds, or for gargling, or in draughts to prevent salivation and its attendant ills. If taken internally, bichloride of mercury influences the stomach, gives rise to inflammation of the mucous membrane, vomiting of blood, &c. The best antidote in such a case is, without doubt, white of egg (albumen) mixed with sugared water or milk. Iron or zinc filings may also be taken mixed up in honey.

We have confined our remarks in this work to the consideration of the atmosphere of photographic studios, the character of the work, and the materials employed, which have a dangerous influence upon the health. Other chemical compounds used in photography may exercise, although in a lesser degree, an influence upon the health of photographic operators, and there are also certain circumstances in the carrying on of the profession that we have omitted to take notice of in this communication on photography from a sanitary point of view.

Our peculiar position as medical adviser to the French Photographie Benevolent Society permits us to make a daily study of the health of photographers, and at some future time we hope to extend and complete the work we have begun. Such as it is at present, we trust it may be of assistance to photographic operators, with whom, two years ago, we first became acquainted, many patients whom we then knew having since grown into personal friends.

## Correspondence.

### DR. VOGEL'S DISCOVERY.

DEAR SIR,—The last number of your journal brings me the good news that Dr. Vogel has obtained lines in the yellow and red portions of the spectrum. I have no need to see the impressions that have been forwarded you, to believe this. I have the honour to know Dr. Vogel personally, and have never doubted his good word, as, indeed, I yesterday wrote him.

It is evident that as Dr. Vogel has obtained the lines in the yellow portion of the spectrum, the argument I used—that is to say, that his results were obtained through diffusion, by reason of the transparent nature of his prisms, or the reflection of the actinic colours upon the interior walls of the spectroscopic eyepiece—falls to the ground.

At the same time, I must complain that Dr. Vogel has not described his experiments with sufficient precision. He announces to the photographic world that it is sufficient to colour a film of bromide of silver to render it all at once sensitive to that part of the spectrum corresponding to the colour in question. This is a radical discovery. But if the colouring must not be too strong, nor too weak, as we learn to-day, the new law is less evident to physicists. And in any case our friend Vogel should have specified these special conditions.

You will agree with me, I know, Mr. Editor, when I ask

Dr. Vogel to publish in your journal, as soon as possible, an exact account of the manner in which the sensitive film must be prepared to retain an impression of the spectrum, which till now it has been impossible to secure.

Everybody cannot obtain the dry plates of Colonel Stuart Wortley, the preparation of which, I believe, by the way, is a secret. If to secure the yellow spectrum these plates are absolutely necessary (which I do not suppose to be the case), then Dr. Vogel ought not to wonder if his discovery is contested, or at least doubted.

In any case, I may add that as soon as I am acquainted with Dr. Vogel's precise manner of working, I shall repeat his experiments, and shall be very happy to be able to declare that I have been successful.—Believe me, &c.,

Ghent, 4th July.

DR. D. VAN MONCKHOVEN.

[Dr. Vogel will, we doubt not, hasten to give, as precisely as circumstances will permit, definite formula for the depth of staining necessary to secure the best result. The plate with which he has favoured us, and his note thereon, show that whilst excess of colour is destructive of all effect, there is a point of dilution, which can probably be stated, at which the maximum extension of the spectrum can be secured; and this Dr. Vogel will doubtless give in response to Dr. Van Monckhoven's courteous request.—Ed.]

### THE GELATINE EMULSION AND CAPTAIN ABNEY'S PROCESS.

DEAR SIR,—In accordance with the wish for experimental notes of the new dry plate process with gelatine, my experience is the same as your last correspondent, namely, the difficulty in getting an even coating on the glass, so that I was unable to give it what will seem a fair trial; but as soon as I tried the process suggested by Capt. Abney, I abandoned all other experiments, as with it I have never lost a plate, and the results are far better (in my judgment) than any emulsion in softness and delicacy. I enclose print from a negative taken this morning—a difficult subject, comprising white rails and heavy shadows, with foliage, and yet all developed without hardness. True, there is a good deal of trouble in preparing the plate, but I imagine nothing good can be obtained without it. I have tried mixing albumen, beer, gallic, &c., as recommended to make one bath, instead of using them separately, but must prefer the effect of the latter.—I am, dear sir, yours truly,

F. R.

### KEEPING QUALITIES OF URANIUM PLATES.

SIR,—As many of your readers use my uranium emulsion process for dry plate work, the following record of an experiment will be of interest to them.

You will remember that I have more than once called attention in your columns to the fact that the presence of nitrate of uranium in an emulsion gave great keeping qualities to the plates prepared therefrom, and I tested this point crucially as follows.

In August last, I was doing some work on plates twenty-four by eighteen, and having three left over, I did as follows. In connection with dry plate preparation, I have a cupboard heated to 110°, and which remained at that temperature four days and nights in every week; during the rest of the week the cupboard is at the normal temperature of the air, and in more or less a damp atmosphere, as it is in the room where the washing of the emulsion plates is carried on. The three above-mentioned plates have remained in that cupboard, untouched, from August last till three days ago, and I send you a negative taken on one of them. You will note it to be as brilliant and perfect as a negative can be, and I have been unable to find any process other than my own able to stand this prolonged high temperature and change to a damp atmosphere. All plates of other kinds tried under the same conditions by me at various times have broken down under the ordeal.

Let me, then, strongly advise those desirous of making reliable, long keeping, and highly sensitive dry plates to



use nitrate of uranium in the emulsion, and if they make bath plates, to use it either in the collodion or the bath.—  
Faithfully yours,  
H. STUART WORTLEY.

July 8th.

[The negative forwarded is clean, brilliant, and in every way technically excellent.—Ed.]

## Proceedings of Societies.

### LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE sixth monthly meeting for the present year took place on Tuesday, the 30th ult., at No. 15, Oldhall Street, the Rev. T. B. BANNER in the chair.

The minutes of the previous meeting were read and passed, and Mr. W. B. Roberts and Mr. L. W. Weber were elected members of the association.

THE SECRETARY gave an account of the excursion to Rhydy-lwyn, and prints were exhibited of the views taken.

Mr. ATKINS said his negatives were taken by Mr. W. B. Bolten's process. He was much pleased with them, and had no doubt they were an improvement on the old way of preparing the plates.

THE SECRETARY read a communication from Mr. P. Mawdsley on the development and manner of using the new Liverpool dry-plate emulsion.

Mr. ATKINS exhibited one of Mr. Janin's photographs in bas-reliefs. He (Mr. Atkins) stated that he had sent, as per advertisement, 7s. 6d. "for specimen with instructions," to Mr. J. Solomon, Red Lion Square, but in reply only received the print exhibited and terms on which copies from photographer's own negatives could be obtained. He (Mr. Atkins) complained to Mr. Solomon that he had paid for instructions, but could get no redress.

Some surprise was expressed by the members that so respectable a house did not at once rectify a mistake when an advertisement was so misleadingly worded.

A print, and also a negative, was handed round, which had been sent by Mr. W. H. Warner, of Denbigh, for inspection. The negative—a church interior—was a curiosity in photography by reason of its having an inverted copy of the distant east windows seemingly floating a short distance from the camera, showing distinctly the window panes, &c., the inverted windows and the windows proper being the same size on the negative.

THE SECRETARY read a communication on the above subject from Mr. Warner (see page 328). A discussion arose, but no definite conclusions were arrived at about the subject of the paper.

A vote of thanks was passed to Mr. Warner for his communication, and also for a beautiful 10×12 print of the now-celebrated Denbigh reredos, which Mr. Warner had kindly presented for the association's album. The print was much admired; for, though very difficult to take, owing to the cross lights in the church, it was as perfect as if taken in a studio.

Some gelatine and other negatives were exhibited by Mr. W. H. Kirkby, and Mr. Cooke showed some prints taken on Durand's paper when quite discoloured, and afterwards kept fourteen months before toning. They showed very little difference from prints prepared in a more rapid manner, and were quite passable.

The meeting was shortly afterwards adjourned.

## Talk in the Studio.

A LIBERAL OFFER.—Mr. W. J. Stillman, writing to the *Academy*, says:—"Looking over the Schliemann, and some other almost equally bad recent photographs, I can only believe that scientific men to whom photography would be useful are hardly aware that it is so simplified by recent practical discoveries as to put it quite within the power of any tourist, or student of archaeology, geology, or any other science in need of illustration, to carry, in the compass of a foot cube, all the apparatus and material needed, and to learn (with average common sense) all the operations involved in the simplest forms of the art in two or three hours' application. I should be most happy to put any student of science in the way of judging of the truth of what I say, without any further expense or trouble than is involved in a visit of an hour any bright day when I am at home. This certainly is a subject on which 'they who have light should impart it,' and I shall be only too happy to put what I know at the service of science."

THE TRANSIT OF VENUS.—The *Times* says: "Captain W. de W. Abney, R.E., writes to us from St. Margaret's, Rochester:—'In your notice of the preparations made for the Transit of Venus Expedition, you have correctly announced that a dry-plate process worked out by myself has been adopted. I should like to add that, with a slight modification, the method of development which will be employed is that introduced by Colonel Stuart Wortley—viz., the use of the strong alkaline developer. As to the Colonel belongs the secret of putting into the hands of the photographers the powerful aid to rapidity with dry plates, I should be glad if you would insert this letter. I find my process is rather more rapid than wet plates when using it, while with the ordinary development it is but little more than half as quick.'"

PHOTOGRAPHY AT THE BOTTOM OF THE SEA.—Dr. Neumayer has recently exhibited before the Berlin Geographical Society a photographic apparatus designed for the determination of the temperature and of the currents at great depths in the ocean. The invention is composed of a copper box, hermetically sealed, and furnished with an exterior appendix made like a rudder. In the interior is a mercury thermometer and a compass, each enclosed in a glass receptacle in which are admitted traces of nitrogen gas. A small electric battery completes the apparatus. When the latter is allowed to descend attached to a sounding-line, the action of the current on its rudder causes it to assume a parallel direction, thus indicating the set of the flow by the relative position of compass, needle, and rudder. The thermometer of course shows the surrounding temperature. In order to fix these indications, a piece of photographic paper is suitably disposed near the glass cases containing the instruments. Then at the proper time a current of electricity is established through the gas in the receptacles, causing an intense violet light, capable of acting chemically upon the paper for a sufficient length of time to allow of the photography thereon of the shadows of the compass needle and of the mercury column. Within three minutes, it is said, the operation is complete, when the apparatus is hoisted and the paper removed.

DANGERS OF METHYLIC ALCOHOL.—The smell of methylated spirit is neither pleasant nor wholesome; fortunately photographers have not much need to use it. The most offensive form in which they come into contact with it is in using old collodion made with such spirit for cleaning plates. In any case, the following hints may be useful.—"Serious maladies," says the *Lyons Medical*, "have been engendered among the workmen in two industrial establishments by the employment of methylic alcohol—that is, wood naphtha, or alcohol derived from wood. The material is used in the finishing of felt hats, and of silk fabrics. Its action is directly upon the mucous membrane exposed to its emanations, and also, through the nervous system, upon the entire organization. The effect is first noticed upon the ocular *conjunctiva*, which becomes inflamed and injected, producing a sensation of sand in the eyes. A copious flow of tears and extreme sensibility to light (photophobia) follow, incapacitating the sufferer for work. Further symptoms include intense coryza, and inflammation of the pharynx and bronchial tubes, together with trouble of the digestive organs. Severe head-aches, and feelings of heaviness and depression, are always present. The rigour of the malady depends upon the extent to which the person is exposed to the alcoholic fumes. The workman who finishes the bottom of a hat is attacked more severely than the one who prepares the rim. It has also been noticed that cabinet makers who use the material in varnish are frequently attacked with tonic convulsions of the fingers, unknown previous to the employment of the alcohol."

COLOURED PORTRAITS.—The *Bookseller* for July notices that Mr. Canton has issued half-a-dozen carte-de-visite-size portraits, of Mr. Disraeli, Sir Stafford Northcote, Lord Salisbury, and other leading politicians, printed in oil colours, and considers that "these ought to be much more saleable at twopence each than plain photographs at a shilling."

BLOCKS FOR ENGRAVING.—A Bavarian firm, Gemeser and Walth, of Munich, says the *Peper and Printing Trades Journal*, "prepare wood blocks photographically for engraving by an adaptation of the permanent photograph process, in which lithographic ink is used, instead of by the old process with nitrate of silver. The advantage claimed is that of giving better tints of shades, the silver process giving only flat black shades, which were a great hindrance to good engraving." The same journal informs a correspondent that



"the system is now almost universally adopted by the illustrated newspapers of photographing the artists' drawing on the block for the wood engraver."

**SPIRITUALISM.**—An enterprising American publisher some time ago announced an edition of the Bible with photographic portraits of Abraham, Moses, David, Jesus Christ, and the Apostles. Apparently there is no difficulty in procuring them, for the *Spiritualist* of June 19th furnishes a portrait of a Medium and "the Spirit," taken from an instantaneous photograph!—*Bookseller.*

**A LARGE PHOTOGRAPH.**—An American contemporary refers to an enormous photograph by Messrs. Paxton and Co., consisting of an enlarged copy of an engraving about 24 by 30 inches. A negative on an 8 by 10 plate was first taken of it, and the enlargement made to 13 feet 6 inches long by 9 feet high, being produced in three vertical sections. The exposure of each section was twenty seconds, the development process being used. The negative, which was an admirable one for the purpose, was made by Mr. Bierstadt.

## To Correspondents.

**FAIRPLAY.**—We have not space for further controversy on the subject. The pretended extracts from the *NEWS* and *YEAR-BOOK*, printed in parallel columns to give an air of accurate comparison, are not, as any one may see, extracts, but garbled compilations; and if they were strictly accurate, would prove nothing. As we can afford to smile at such petty misrepresentation, our correspondent may be content to let the matter drop.

**J. WILSON.**—In order to enable us to judge properly of the effect of the retouching, you should have sent us a print taken from the negative before retouching, for comparison. The retouching is smoothly done, but the face is a little flat; whether this is due to lighting or other photographic causes, or to excess of retouching, we cannot say without means of comparison. 2. The toning and general quality of the print are good. 3. If you are satisfied with your rolling press there is no need to change, but if it is not efficient you will find the burnisher excellent.

**A SUBSCRIBER.**—Mr. Stillman's Manual is published by C. D. Smith and Co., Fleet Street. 2. The use of spirit in the printing bath is an old method approved by many practical men. Mr. England has used it for years. He uses it at the rate of about three ounces in each pint of water; that is, he uses seventeen ounces of water and three ounces of spirit. So far as we remember, he uses methylated spirit, which answers perfectly, its unpleasant smell being the only objection. In no case need absolute alcohol be used.

**TRO.**—Most samples of chloride of gold are acid, and the use of prepared chalk is the simplest and safest method of neutralizing the acid. Mr. Bovey's toning bath has generally been found successful.

**UNFIXED.**—It is possible to print from an unfixed negative, but your simplest plan will be to run an edging of wax or black varnish round the film, and then fix and wash in the usual way.

**A. B.**—So far as we can judge from the scraps of prints enclosed, the stains are due to imperfect fixation, or, at least, the stains seem to be caused by decomposed hyposulphite of silver, and are similar to the results of imperfect fixation. Some of these are suggestive of finger marks, and may have arisen from the fixed prints having been handled, before perfect washing, with fingers which had touched nitrate of silver. This might not produce a visible mark at the time, but a trace of hyposulphite of silver might thus be formed in the print, which would eventually decompose, and cause a yellow stain.

**HONEST ENQUIRER.**—The story has been told often enough; we have ourselves several times repeated the exact details. M. Gaudin did experiment with collodion emulsions of iodide, bromide, and chloride of silver in 1861, which he termed "photogenes." With the two former salts he obtained promising results; with the chloride of silver, as he himself stated in his own journal, he found it impossible to succeed. The journal to which you refer practically charges him with nuthing when it declares he did that which he himself denied. The earliest account of emulsion experiments appeared in the *NEWS* in 1860, when some crude experiments by H. Bellini were described. Next came those of M. Gaudin, and about the same time some by Captain Dixon, ourselves, and others, with iodide and bromide of silver for negative purposes. The first successful introduction of a process, as distinct from tentative experiments which led to nothing, was the bromide process for negatives of Messrs. Sayce and Bolton, and contemporaneously therewith our own collodio-chloride process. The theory to which you refer as "unjust, if not absurd"—which is clearly both—would give to Mr. Bellini the origin of the collodio-bromide negative process! For other details we must refer you to back volumes of the *NEWS*. The historical-controversial aspect of the question has occupied more than enough space.

**B. D. M.**—There are no certain means of restoring a faded print. Several plans have been tried, and in some cases a decided improvement is effected. One method consists in immersing the print in a strong solution of chloride of gold. This, to some extent, removes the yellowness of the whites, and gives a fresh, purple bloom to the dark portions of the print. Saturating blotting-paper in a solution of bichloride of mercury, and placing the faded print between folds of the blotting-paper, sometimes effects an improvement. We are aware of the fact that many of the old sulphur-toned prints remain in perfectly good condition, whilst more recently produced gold-toned prints have faded. This is one of the puzzling problems of photography. The precise conditions of permanence in conjunction with sulphur toning have never been definitely ascertained. Fading in gold-toned prints is doubtless due to imperfection in the fixing or washing conditions; but on what precise point the imperfection with any special print arises could only be ascertained by careful investigation of particular cases.

**SALT.**—You may use a strong solution of salt after toning, and before fixing, with advantage, rather than with any risk of injury of any kind to the prints.

**R. S. T.**—The scratchy lines from the drag of the brush arise from the film being too moist, which may arise from under-exposure, too much glycerine, or a too moist atmosphere. Dry the plate again by heat when you find this the case. Re-grind, and carefully sift your plumbago. Patience and experience alone can ensure success. See an article in the present issue.

**CAMBALLO.**—See answer above.

Several Correspondents in our next.

## METEOROLOGICAL REPORT FOR JUNE.

BY WILLIAM HENRY WATSON

Observations taken at Beapton, near Whitehaven, 36 feet above sea level.

Date.	In shade. Morning.	11 a.m.	Noon.	Night.	In Sun. Noon.	Direction of Wind at 9 a.m.	
1	56°	58°	58°	—	—	S.	Rain a.m.
2	62	58	56	—	—	S.S.W.	Rain a.m. and p.m.
3	58	58	58	—	—	W.	Fair and sunny. Very clear this evening
4	59	61	57	—	—	S.	Fair. Gloomy. Fog this evening
5	56	59	55	—	—	S.	A little rain this morning. Sunny afternoon
6	57	59	55	—	—	W.S.W.	Fair, sunny, and clear
7	55	61	55	—	—	N.W.	Fair and sunny. Very clear this evening
8	61	65	58	—	—	S.S.W.	Fair, clear, and sunny.
9	64	64	60	—	—	S.S.W.	Fair. Gloomy. Strong wind this evening.
10	53	59	52	—	—	S.W.	Fair and sunny. Windy
11	59	62	47	—	—	W.S.W.	Storm of rain and wind. Sunny afternoon
12	52	56	50	—	—	S.W.	Fair and sunny. Frost late last night or early this morning.
13	54	—	50	110°	5	E.	Fair, sunny, and clear
14	58	65	56	106	—	S.S.E.	Fair, sunny, and clear
15	60	66	56	120	—	N.W.	Fair and sunny
16	57	65	56	117	—	N.N.E.	Fair and sunny. Very windy this evening
17	59	71	57	120	—	N.	Fair and sunny. Windy this evening
18	60	72	58	128	—	N.W.	Fair and sunny. Rather hazy
19	58	61	60	110	—	N.	Fair and sunny. Rather hazy
20	58	61	53	109	—	W.S.W.	Fair and sunny. Rather cloudy
21	58	68	54	123	—	S.W.	Fair and sunny
22	66	62	56	103	—	S.W.	Fair and sunny
23	64	61	57	—	—	S.	Shower a.m. and p.m. Gloomy all day
24	62	64	57	103	—	S.S.W.	Fair and sunny all day. Heavy shower 11 p.m.
25	62	62	53	119	—	S.	Rain a.m.
26	57	68	53	—	—	S.	Fair, sunny, and clear
27	53	65	53	99	—	S.W.	Fair and sunny
28	57	65	57	107	—	S.S.E.	Fair and sunny. Rather hazy
29	68	68	57	—	—	S.W.	Fair. Gloomy. Distant thunder p.m.
30	62	63	58	—	—	S.W.	Heavy rain a.m. and p.m.

From the above data we have as follows:—

	Mornings.	Noons.	Nights.
Maximum temperature in shade during the month	68°	72°	60°
Minimum ditto	52	56	47
Mean ditto	58.9	63.3	55.4
Maximum temperature in direct rays of sun	—	128	—
Minimum ditto	—	99	—
Mean ditto	—	111.8	—
Number of days on which rain fell	—	—	7
Number of fair days	—	—	23
Number of fair days on which it was sunny	—	—	20
Number of fair days on which it was gloomy	—	—	5

Wind from S.W. and S. prevailed.

Vegetation has suffered very much from the want of rain, and the hay crops are much below the average.

• These observations were taken in direct rays of sun, and shaded from wind.



## The Photographic News, July 17, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

INTENSIFYING NEGATIVES—A MONUMENT TO PAUL PRETSCH—A NEW BASIS FOR COLLODION PRINTS—THE PARIS SALON PHOTOGRAPHED.

*Intensifying Negatives.*—Several methods of rendering negatives more vigorous or dense have been suggested, not involving the employment of intensifying solutions, which some people look upon with great distrust. Mr. Blanchard was one of the first to suggest securing density by allowing the light to act upon the unfixed image, and we believe that for some years past he has employed this method in the production of the beautiful portraits for which he has become so famous. Another plan is to superpose two thin negatives, and thus obtain a vigorous, and, at the same time, delicate, result. A third process, recently suggested, is to coat the back of the fixed and varnished negative with a bichromated gelatine mixture, and allow the light to penetrate through the image to the sensitive film below, and, after a time, to wash and fix this secondary image, which aids materially in printing. If the negative in the first place happened to be a weak one, the non-actinic yellow tint, as also the bichromate image itself, imparting considerable vigour to the cliché. Another plan is now brought forward by M. Klinger, of Brannan, in Germany, which is similar to Mr. Blanchard's, and consists in exposing the unfixed image to light under a pale yellow glass, after having carefully wiped the reverse side, and freed it from any spots and blemishes that may exist. The negative is dried, and if not then sufficiently dense, it is again exposed as before. It is afterwards fixed and varnished in the ordinary way.

*A Monument to Paul Pretsch.*—Paul Pretsch is to have a monument erected to his memory in Vienna. This is good news, for it may have the effect of keeping in the remembrance of future generations the name of a worthy man, who worked hard to establish a practical photo-engraving process. Unfortunately his work never got beyond the experimental stage, and although many pictures of his have been circulated and printed which amply prove how very near he was to success, he never attained it. Unfortunately, his results just fell short of being good, and there was always some little more perfection required. However, as the Vienna Photographic Society are determined that no efforts shall be wanting on their part to perfect the process, and to this end have offered prizes, and instituted other means of encouragement, we may hope that before long Paul Pretsch's photo-galvanic process may be worked out in a thoroughly practical manner.

*A New Basis for Collodion Prints.*—A simple manner of producing portraits or other photographs upon a milk-white ground, similar to the well-known Eburneum pictures, is to float a collodion positive upon a substratum of collodion and white lead. Very finely ground white lead is shaken up in a bottle with some thick normal collodion, so as to form a beautiful creamy emulsion, and this, poured upon any suitable substance—such as a thin metal plate, a stiff smooth fabric, or similar basis—yields a smooth uniform surface of the purest white. The positive collodion image is removed from the glass plate in the ordinary manner, and the white tablet slipped under the image as it floats in the water. When the image has dried—it is stretched uniformly over the tablet by means of a soft brush—another application of collodion is made, to cement the picture down. For collodion enlargements, which are generally a little hazy and feeble, a basis of this kind is peculiarly fitted, and as the whole surface of the white lead is protected by one or two coats of collodion, there is little danger of its being attacked by the atmosphere.

The normal collodion used must be very thick, and the amount of lead added just sufficient to give it a creamy consistence; if a large quantity of white lead is added, the film is too rotten to hold, and in this case a preliminary coating of collodion should be applied before the image is floated on to it.

*The Paris Salon Photographed.*—MM. Goupil et Cie. are making good use of the Woodbury process in Paris. All the principal paintings of this year's Salon (the Royal Academy of Paris) have been photographed, and copies of various sizes are selling in hundreds and thousands. Series of ten reproductions are published at a time, and as many as six of these series have now been issued. The ten photographs, something like cabinet size, are to be had, neatly mounted and enclosed in a portfolio, for ten francs; and those who desire it may obtain photographs of the picture of larger dimensions at the rate of ten francs a piece. This is a trade in which photographers in England cannot, unfortunately, engage, for artists will not part with their copyrights so easily; and yet, when it is considered what a very few of the pictures exhibited are ever engraved, it is very questionable whether our English painters act wisely in the matter. All the popular pictures in the Academy are invariably reproduced in our illustrated journals—in the *Illustrated London News*, in the *Graphic*, and elsewhere—and the number of copies that are thus distributed certainly do more good than harm to the artist's reputation. Now in Paris, the numbers of photographic reproductions sold of pictures are so great that both artist and publisher secure a good profit, for it stands to reason that by selling a picture a dozen inches long for ten francs, a very good margin remains to the producer, especially when a mechanical process is employed for printing. We feel certain that artists in this country would gain both fame and money by allowing their works to be cleverly copied in the camera, and there cannot be a doubt that in a very few years more this course will be as universally adopted in England as it is abroad. Photographs can never compare with the original painting in colours, and the issue of monochrome copies only tends to enhance the value of the original.

### AMERICAN CORRESPONDENCE.

PHOTOGRAPHY IN CALIFORNIA—A NEW WORK ON PHOTOGRAPHIC PRINTING.

*Photography in California.*—A few weeks ago the negatives sent to the publishers of the *Philadelphia Photographer*, in number about one hundred and fifty, to compete for the gold medal offered for the best three, were examined by the judges, and, to the surprise of all, the award was made to parties who sent their negatives three thousand miles to compete: Messrs. Bradley and Rulofson, of San Francisco, California. They sent six negatives of the same subject, all equally perfect, being absolutely without spot or blemish. They are among the purest specimens of photography it has ever been my good fortune to inspect. All there is in the print was produced in the negative. The retouching is so slight that it can scarcely be detected, and the beautiful gradations of light and shade are perfectly natural and spontaneous. For chemical effects, lighting, posing, and general artistic treatment, they deserve the study of all who feel that they are not yet as high up in the scale of excellence as they wish to be, and trust they may be benefited. I give below letters from Mr. Rulofson and his operator, Mr. Taylor, and a cut from a photograph of their operating-room, should you see best to present them to your readers. The latter, from the eight by ten print sent me, has a very inviting appearance, seems large, and well supplied with all appliances necessary for first-class work.

The modesty of our friends in speaking of themselves is as refreshing as their work is excellent. Their apparent



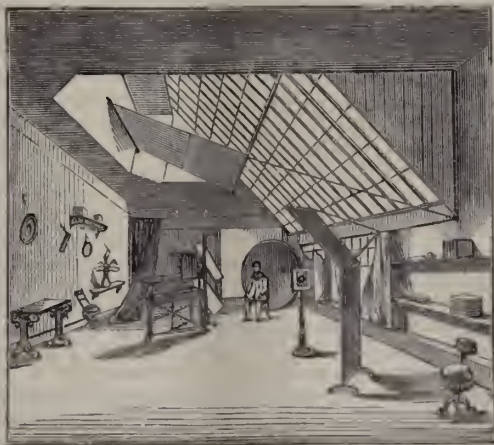
unconsciousness of having produced anything superior brings forcibly to mind the following paragraph from "Art Culture: a Handbook of Art Technicalities and Criticisms," by John Ruskin. Under "Art Laws," he says:—"While in painting, much knowledge of what is technical and practical is necessary to a right judgment, and while every great composition is in perfect harmony with all true rules, and involves thousands too delicate for eye, ear, or thought to trace; while it is possible to reason, with infinite pleasure and profit, about these principles when the thing is once done, yet all our reasoning will not enable any one to do another thing like it, because all reasoning falls infinitely short of a divine instinct. Thus we may reason wisely over the way a bee builds its comb, and be profited by finding out certain things about the angles of it. But the bee knows nothing about the matter. It builds its comb in a far more inevitable way. And from a bee to Paul Veronese, all master-workers work with this awful, this inspired unconsciousness."

The following are the letters referred to, and I am glad to see the operator recognized, and allowed credit for his part in the work.

Mr. Rulofson says:—

"I herewith forward to you a note from Mr. Taylor, giving our formulæ for working, and containing some of his views on the subject; but I must confess I would not have you understand that I endorse all he says on the subject of the relative quality of San Francisco work, nor the causes to which he ascribes the assumed superiority, while I would be slow to detract from the industry, perseverance, and skill of our photographer. I think it but fair to admit that they possess some climatic advantages not enjoyed elsewhere in America. I do not regard the light as superior in actinic power to that of the Atlantic States; but we do possess a more even temperature, the thermometer seldom rising above 75°, or falling below 60°, with a slightly humid atmosphere, presenting the most favourable conditions for delicate chemical processes involving the use of volatile substances. And California's proverbial modesty causes us to cast about for some natural cause to which to attribute any superiority which our friends may kindly ascribe to our productions."

"I send herewith a plan of our gallery, from the street entrance to elevator, to the roof; there are in all twenty-nine rooms, reasonably well adapted to their several uses. You will observe that we formerly occupied the corner building only; we then cut through into the adjoining building on Sacramento Street, and



later, effected an entrance into the one on Montgomery Street. We are now giving employment to thirty-four hands all told. We employ six Chinese; they are faithful, industrious, and expert, valuable aids in the mounting and finishing department.

"We made several attempts to obtain an interior negative of our reception room, of which we are proud, but failed, owing to the long exposure required, and the throng constantly interrupting."

"And now it only remains for me to say that I regret not being able to present some more interesting material for your consideration."

Mr. D. B. Taylor, the operator (which means the gentleman who makes the sittings and superintends the dark closet) says:—

"In reference to your request, I give you my formula by which the prize negatives were made. It is an old and long-used formula, but I think there is no better when carefully used."

#### COLLODION.

Ether and alcohol	...	...	equal parts
Cotton	...	...	6 grains to ounce
Iodide of ammonium	...	...	4½ grains
Bromide of potassium	...	...	2 grains

SILVER BATH—40 grains, slightly acid.

#### DEVELOPER.

Water	...	...	96 ounces
Iron	...	...	6 "
Acetic acid	...	...	10 "
Alcohol	...	...	6 "

"The above is the formula I have worked for the last four years, all the time I have been with Bradley and Rulofson, and our negatives, in quality, improve from year to year—not by trying every new-fangled notion that comes along, but by giving our closest attention to the details of the process. I have worked in photography for the last sixteen years in the Eastern and Western States, and have met more thorough-bred photographers in San Francisco than I ever saw in my life before. This city has the reputation of making some of the finest photographs in the Union, and I might say the world, and it is all due to the careful hard workers in photography. The climate has nothing to do with it. Work—work does it; work is the word with us in San Francisco."

"I have made an interior view of my operating room and lights, showing the position the camera and sitters were placed under the light, when the prize negatives were made. I forward you a copy."

The July number of the *Philadelphia Photographer* will carry your specimen print from the prize negative, and I believe it will bear out all I have said about it.

When in Europe, I found that the pictures of our Yosemite Valley, and "big trees" of the Maniopa Grove, were quite in demand. One of the most successful photographers in the wild sections named is Mr. J. J. Reilly. He has sent me his working formulæ, and I append the same for the use of those who have similar work to do. He also mentions some of the difficulties with which he has had to contend. He says:—

"Since I left Niagara, I have been over a great portion of this coast; in the Yosemite Valley especially, for the past four summers. I have also made a few trips outside of the valley, crossing the summits of the wild Sierra Nevada Mountains, and also running some risk of being scalped by the Indians; also ascending the tops of the highest mountains, ten thousand feet above the sea, where lay in places from five to ten feet of snow right in the month of August, and no water to be found short of one or two miles to wash negatives with. This difficulty was overcome by building a brush fire and heating stone in it; then filling a bucket full of snow and placing the hot stone therein; in a few minutes we had plenty of soft water, and by cutting a top off one of my socks, and tying it around the faucet, I was enabled to get clean water and so do clean work; and on that trip of four weeks I made some fine cloud effects. But I can get no more for this class of work, from these hard-earned negatives, than if they had cost me nothing, and the pictures were of the poorest kind."

"My way of working is as follows:—I am using a pair of 3½-inch focus tubes, known as the imitation Dallmeyer's; also a pair of genuine Dallmeyer's wide-angle 2½-inch focus. With these two pairs I do all my work."

"My collodion is as follows:—

No. 1.—Plain collodion	...	...	1 ounce
Iodide of cadmium	...	...	4 grains
Bromide of cadmium	...	...	4 "
No. 2.—Plain collodion	...	...	1 ounce
Iodide of cadmium	...	...	7 grains
Bromide of cadmium	...	...	3 "

These two can be so mixed as to save the most delicate clouds, if



No. 1 work too thin, mix with it a little of No. 2 for cloud effects; if not for clouds, mix in equal proportions.

No. 3.—Plain collodion	...	...	1 ounce
Iodide of ammonium	...	...	6 grains
Bromide of ammonium	...	...	3 "

"This will much benefit your collodion by mixing one-third of No. 3—that is, if no clouds are to be taken. In making my collodion, I use equal parts of ether and alcohol, but I dissolve my iodides and bromides in the alcohol first, and I use from  $3\frac{1}{2}$  to 4 grains of gun-cotton to the ounce.

## DEVELOPER.

Double sulphate of iron and ammonia	...	...	1 ounce
Water	...	...	20 ounces
Acetic acid	...	...	2 "
No alcohol.			

## REDEVELOPER.

Pyrogallic acid	...	...	3 grains
Citric acid	...	...	2 "
Water	...	...	1 ounce
No. 2.—Nitrate of silver	...	...	20 grains
Water	...	...	1 ounce

Twenty drops of No. 2, in one-half ounce of the pyro, poured over the negative after fixing and well washing, will bring it up to the required intensity. This solution may be poured off and on the plate till enough intensity is obtained, but must not be used a second time. But the bottle must be washed clean before developing a second plate. After fixing the negative and then redeveloping, it don't dry any more intense. Always keep a weak solution of sulphuret of potash on hand, so that should the pyro stain or turn your negative a scarlet colour, by flowing the plate with the sulphuret once or twice this colour will leave. Wash well, and set up to dry; then it is ready for varnishing."

*A New Work on Photographic Printing.*—Photographic printing, it is generally acknowledged now, should have the same care and attention as the making of the negative. Nearly all our best photographers admit that the printing department has been too much neglected. No pains or expense have been spared to construct the best skylights, work the best chemicals, and the most approved formulæ; to employ men of the highest abilities in the dark room, under the skylight, and in the retouching department; all that the negatives may be strictly first-class. Oftentimes all the energies of the proprietor are given to the negative department. He buys books on chemistry, light, art, and studies them all diligently; but the printing department is left, in a great measure, to take care of itself. No books are ever bought for the printer; he may not have an opportunity to even see the monthly journal his employer takes for his own especial benefit. The printer picks up what he can, and does his best; but neither he nor anybody else dreams that any artistic skill or study are required to produce a good print. If the prints are not right, the negatives must be at fault. They are all printed on one brand of paper, all prepared in the same way, and some prints turn out well, while others do not; if there be any fault, it is attributed to the negatives. This is the way it has been to a great extent. There has been a want of union, or harmony of working, between the departments. The negative maker has often been surprised that some of his most beautiful work has turned out such miserable prints. He has often seen, too, that the proof from a negative, printed, perhaps, on any old piece of paper that came to hand, probably left over from the day before, would be better than any afterwards printed in filling the order. This would arise from the printer not understanding the conditions necessary to make the best print from that particular negative.

Mr. Hearn, as a practical man, has seen all these things, and, being strongly impressed with the importance of having more light in this direction, has prepared this book. It is mainly a transcript of his own experience; and as every thorough man in any business knows how much depends on what are often considered minor details, and which are often overlooked by experienced teachers, the explicitness of this work will be appreciated. It is an

important feature of it, and all who study it for information will find it a perfect text-book for the printing-room. There seems to be nothing omitted. Every condition and quality of negative, its peculiar features, how to study it, and the treatment it should receive in the process of printing, the selection and preparation of the paper, the effect produced by certain processes and methods of working, and every point, apparently from the first inspection of the negative to the finishing of the print, is anticipated, and the necessary instructions to cover all contingencies given. Any proprietor who will place this book in the hands of his printer will no doubt find an improvement in his work, and be himself relieved of much responsibility of looking after that department. It is especially adapted to those who are learning or striving to improve, though it is full of useful suggestions, and will be a great help in the hands of the most experienced. The author has been known for several years past under the *nom de plume* of "Young Printer." He is yet a young man, but by diligent study and observation has made himself a master of his business. The book is well illustrated, and contains also a specimen print by the author, from negatives by Mr. F. Gutekunst, of this city.

I draw attention to this work for the reason that it is a fact worth noting, that photographic printing has become of enough importance to require a work so elaborate as this to be published in its behalf. It is devoted solely to plain and albumen paper printing, and Mr. Simpson's collodio-chloride process. No doubt your publishers, Messrs. Piper and Carter, will have an early supply, and be able to fill all demands for it. EDWARD L. WILSON.

## GERMAN CORRESPONDENCE.

ABOUT NEGATIVE VARNISH—ALBUMEN PAPER MANUFACTORIES—YELLOW SPOTS ON ALBUMEN PAPER—REPRODUCING NEGATIVES—ABOUT ENAMELLED BURN-IN PICTURES—NEW APPLICATION OF POWDER PROCESS.

BY DR. VOGEL.

IT may appear as labour lost to write something new about negative varnish—particularly when writing to America, where good varnishes are by no means scarce, and where even inferior kinds, on account of the dry climate, do good service. It is different in the damp climate of Europe, and year in year out we hear complaints about the cracking of the film. "Such things do not happen with us," said an American friend to me. Happy America!

But there are certain shortcomings in varnishing of which I will speak now. It has most likely happened to every photographer that the picture, on being varnished, became dissolved; it was eaten away as soon as the varnish was poured upon it, and floated partially or entirely away with it. I observed this phenomenon ten years ago, and found that an addition of water to the varnish will cure the evil. One cubic centimetre of water to one hundred cubic centimetres of varnish suffices. When water is added to the varnish a precipitate is formed, which is removed by warming the varnish. This fact has led to the supposition that too strong an alcohol is the cause of the dissolving of the film; for it is well known that some samples of pyroxyline will dissolve in warm alcohol, and this is the reason why the same varnish will not dissolve every film, but only certain collodions. Ungar, in Vienna, has lately demonstrated that not only the alcohol, but also a certain percentage of turpentine in the varnish, causes this eating away of the film. Ungar found that a solution of twenty parts of turpentine in one hundred parts of water possessed strong dissolving power for collodion films—so much so that the film will always be dissolved when these conditions are present, and particularly when the plate has been warmed.

I remember a communication of our friend Simpson, which he wrote ten years ago, to the effect that oil of



turpentine may be used for dissolving cotton. At all events, there are several substances which will dissolve cotton which heretofore have been but little tried—for instance, acetone, nitro-benzole, &c.

Ungar's communication points to the fact that turpentine in the varnish exercises an injurious influence; on the other hand, turpentine is frequently added to varnish because it improves its quality in other respects. Ungar maintains that the ugly cracks and splits in varnish are avoided by adding turpentine. He speaks of a varnish which showed cracks one quarter of an hour after it had been applied, and which, by the addition of turpentine, became fit for use. Castor oil, which is also sometimes added to varnish, is said to be not near as efficient as turpentine. Ungar gives the following formulæ:—

Yellow shellac	...	...	...	2 parts
Turpentine	...	...	...	1 part
Dissolved in weak alcohol.				

Also,

Sandarac	...	...	...	1 part
Turpentine	...	...	...	1 "
Camphor	...	...	...	1 "

Plates which have been coated with the last-named varnish may be placed for weeks in nitric acid without the film being destroyed. In order to remove this varnish warm lye has to be used. Ungar states, further, that the lead pencil retouch adheres to this varnish without any further preparation.

I add some observations on the distortion of the film, due to the action of the varnish, sometimes in the shape of expansion, at others as contractions. It seems that this depends mainly on the character of the varnish which has been employed, for a mastic varnish which I tried recently did not expand the film in the least.

In my last letter, I wrote to you that all the Dresden albumen paper manufactories had been consolidated into a single joint-stock concern. It was at the time supposed that Trapp and Munch, in Friedberg, would also join in this arrangement; this, however, is not the case. Trapp and Munch remain independent, and use, as heretofore, Rives plain paper. Speaking about paper, I have to caution those of my readers who are smokers. Mr. Constant states that the small yellow spots, which we sometimes notice on the finished pictures, are caused by the ash-dust from cigars. He has noticed that in the centre of this spot a small grain is always perceptible, and that a yellow colour extends around it, which extends the further the larger the grain. This spot becomes visible after fixing and washing, but becomes prominent only after drying. Mr. Constant refers to the testimony of a lady photographer, who was much annoyed by these spots, until, finally, she forbid her workmen to smoke in the atelier, when the spots disappeared.

I myself do not smoke, and have never noticed these spots; but, on the other hand, I know several photographers here who smoke constantly, and who have never noticed these spots.

The process of Obernetter for reproducing negatives is much talked about. I have recently seen a negative portrait of the Emperor, which had been reproduced by Obernetter in an admirable manner. It is certain that not every one is able to reproduce by this process as successfully as Obernetter, who, by years of practice, has acquired an astonishing routine; and this seems to be necessary. His process is the same as the one which is employed in making enamelled or burnt-in pictures. I have met many persons who have tried this process, but did not meet with any success. Obernetter has published lately some interesting facts which explain the want of success. In making a porcelain picture a film of chromate of gum is exposed to light, and dusted over with the enamel powder; the plate is afterwards coated with collodion, and washed

finally with diluted acid, in order to remove the chromic salts. This acid is, according to Obernetter, the objectionable feature; it decomposes the pigment, which loses, in consequence, tone and lustre, and turns grey and ugly. This objectionable feature is at once removed if we employ in place of the acid, an alkali for washing the plate—for instance, a weak solution of soda or potash. Many persons torment themselves by making the solution in the dark, by dusting in the dark, and coating the plate in the dark, &c. This, however, is not necessary. The solution does not suffer by light; the dry film is somewhat affected by light, but only if the action continues for some time.

A copper or glass plate is coated with a thick solution of ten grammes gelatine, two grammes glycerine, four grammes bichromate of ammonia, and fifty grammes of water; when the plate has become dry it is exposed under a negative. After exposure the plate is dusted over with fine zinc-dust, such as is found in the zinc works, until the depths are strongly infected with it. When the plate has been sufficiently dusted, a part of the chromate is washed out with water, and this is continued so long as the water has a lemon-yellow colour; afterwards the plate is left to dry spontaneously. The remnant of the chromate remaining in the plate is just sufficient to make the gelatine film, by long exposure to light or heating to 150°, insoluble. When this has been done the plate is exposed to dilute muriatic acid, the zinc dissolves, and the resulting hydrogen reduces, in its nascent state, the insoluble gelatine into the soluble modification. The film is then washed with hot water, and we have a relief plate in which all the parts are depressed where the zinc-dust had been before—in other words, the shadows. This relief plate can be copied by the galvanic process. Unfortunately, the half tones, as well as the shadows, are depressed, and hence we have no half tones in the picture. But line drawings may be reproduced by this process in an excellent manner. This kind of work, however, is by no means pleasant, for the zinc-dust is injurious to health, and to inhale it cannot be avoided. If we work for half-an-hour at this process the consequences are metallic taste, loss of appetite, and tendency to vomiting. Partially, we can protect ourselves by the use of respirators. Two or three plates a day may be made with impunity.—*Philadelphia Photographer.*

## Recent Patents.

### PHOTO BLOCK PRINTING.

BY E. H. COURTENAY.

The following invention consists in a method of producing by photography blocks for surface printing. The specification is as follows:—

"This invention has for its object the preparation of printing surfaces by means of photography and hydraulic pressure, and by its means plates or blocks are engraved, surface or intaglio, that can be printed from by any of the presses in ordinary use, the subjects being taken direct from nature or otherwise.

"In the first place I prepare a suitable collodion containing oleate of silver and a powder that will not act injuriously to the collodion or silver bath; the powder I use for producing a negative for the purpose of giving a certain amount of granularity to the finished surface block is corn meal or any other similar farinaceous powder that will not disturb the delicacy of the negative film through the repeated washings the same is subjected to; or a mineral powder can be used, such as powdered glass or pure silic obtained from silicate of potash or ammonia; in fact, any powder can be used that will not injure the chemistry in the production of the plates,—the object of the use of the powder being to produce a kind of stipple in the negative film of a photograph from nature, and that of the oleate of silver to give sensitiveness and vigour to the negative, combined with a certain neat appearance of the film that assists to check the too energetic action of the light through the transparent parts of the negative in the production of the positive, which I prefer to take by transmitted light.



through the camera, with or from the negative in grain before mentioned.

"I do not confine myself to the use of a collodion containing any particular powder for the purpose of producing a grain or stipple; I sometimes use a composition in which is mixed a suitable powder for producing the granularity required; I also use plates prepared with suitable grain, according to the purposes required, either artificially or done by hand, which I afterwards impress on the soft metal plates. By this method I claim originality in producing photo-mezzotint, and photo-aquatint, as also line subjects to imitate chalk drawings, by hydraulic pressure.

"A soft metal plate is prepared with a grain suitable for the intended design, after which a relief photograph is transferred to the plate of a suitable thickness, the gradations of the photograph filling certain portions of the grained plate in lieu of the engraver scraping away the lights and tones in the usual manner; a cast is now taken with gutta-percha and electrotyped in the usual way, either solid or backed up with type metal, after which the face is cleaned, and the plate is ready for the press.

"I now proceed to take a transparent positive as follows:—I take a suitable collodion without the powder, the camera being adjusted to the size of plate or block required, and take a transparency in the usual way from the granulated negative. In the positive taken as above there are those conditions in it that are requisite for the production of a surface block in stipple; or a grained plate can be used instead of the positive transparency in grain, the negative relief being transferred and impressed on to the grained plate; or a smooth plate can be used with a grain in the composition used for the negative relief, to obtain which I prepare a gelatinous compound of such a nature that when acted upon by light a photograph is obtained in negative relief from the positive above described.

"The composition I use and find most convenient is a mixture of gelatine, sugar, tragacanth, and starch, and a colouring matter—usually carbon—in fine powder or liquid Indian ink.

"I do not confine myself to one or any particular ingredient for the production of the photograph; any compound can be used in combination with chromic acid or any of its salts, such as bichromate of potash or ammonia, or any other sensitizing agent.

"I do not claim originality in producing a photograph in relief by using one or any of the substances herein-before mentioned.

"I claim originality in the method of producing a negative photograph in relief so that by pressure I obtain a positive in metallic relief that can be printed from to produce photographs at the ordinary printing press.

"I do not claim anything in common with the process known as photo-relievo, my process being the reverse of the one named above, inasmuch as the relievo process is intaglio, used with a special ink to suit the requirements of that process; but I claim the process of making surface blocks by photography and pressure, to be printed from by the ordinary methods of printing.

"To use the composition above mentioned I level a slab of glass, and place paper or any other support, with the back wetted, perfectly flat on the glass, and pour a sufficient quantity of the compound solution on to the paper, after which it is hung up to dry. When the sensitized compound is dry it is then rolled and placed under the positive in the photographic printing frame, or it is placed under a negative if for an intaglio plate, and submitted to the action of light; daylight is best; the electric light will do. When sufficiently impressed, which is determined by the strength of the light, it is taken from the frame and transferred to a type metal plate, the plate being highly polished; any other soft metal will do when the block is to be electrotyped. With the negative photograph now on the plate it is placed in warm water, the water being changed until the parts not acted upon by light are washed away; the plate is now dried, and the design in relief upon the plate is now ready to be engraved by pressure, which is performed as follows:—If the plate is inked at this stage with the roller it will deliver a negative print, the lights and shadows are reversed, the whites print black, and the blacks white; the plate is therefore put between two highly polished steel plates and placed upon the bed of the hydraulic press and submitted to very great pressure; the type metal plate is now as smooth as the steel plates between which it was pressed, consequently the parts of the design that were in relief are now sunk, and form the lights of the print; the smooth parts facing the steel plate being the design to be printed from in relief, the photograph is washed out of the plate that has been pressed, and the plate trimmed and mounted on a block in the usual way; it is

now ready for the press, to be printed from in the way usually adopted for printing woodcuts, excepting the difference that a photograph is used for the overlay instead of one cut by hand as for woodcuts. The photograph for the overlay is similar to the one used to engrave the plate in respect to relief, but it must be printed from a negative, care being taken that the negative is the exact size of the block required, and the print is transferred to paper and adjusted to the tympan of the press as is usual with ordinary overlays. By this arrangement it will be seen that the photographic overlay will register the photographic relief block, and according to the gradations of the photograph on the tympan of the press will be regulated the amount of ink delivered to the print.

"I also claim as original the method of engraving plates by photography and pressure as described above, by the negative photograph in relief, of all or any subjects that can be copied for the purposes of reproduction, such as engravings, drawings, pen sketches, water colour and other drawing, reprints of books, and all objects or subjects that can be photographed and engraved by the above mentioned process, as likewise the production of designs in silver and gold from printed matter.

"I now proceed in the description of the method by which plates can be reproduced from printed matter, and which I claim to be original. A negative is taken as dense as possible from the subject required in block, and a transparent positive from that negative, likewise as dense as it possibly can be made by the ordinary means known to photographers; the positive is then used as in the method described for nature photographs on a composition made of similar ingredients, or the same as used for nature will do; the treatment is the same up to the pressure in the hydraulic press; after the design is forced into the plate the boldest parts of the work are treated with a solution of bichromate of potash and allowed to dry, after which those parts that were so treated are coated with strong gelatine and silex, and dried in a warm place in the light; the heat and light render those parts that were touched with the bichromate insoluble, and after washing away the upper part of the gelatine the whole is dried and again submitted to the press between the steel plates, causing those parts to be deeper where the gelatine has been applied; sulphate of iron, alum, or any powerful astringent can be used instead of the bichromate solution, or anything that will render gelatine insoluble. The plate is now washed in water containing an alkali for the purpose of removing the photograph, after which it is coated with zinc by electro-deposition in the usual way of depositing that metal; the plate is now inked up with a hard smooth roller, taking care that the lights are free from ink; it is then treated with the solution of nut galls, phosphoric acid, and gum, used by zincographic printers. The plate is used in either the press called the type litho, the litho machine, or when mounted in the type press without the lights being cleared by cutting; or if the work is required to print at machine with letterpress the largest of the lights are cleared in the type metal or lead previous to electrotyping when that is required.

"The advantages gained by this method of preparing blocks or plates are, first, the rapid method by which the plates are made; the simplicity, ease, and certainty of production; and, next, the large number of photographs that can be printed at one operation."

**TRANSPARENT PARAFFIN**—The paraffin of commerce is a colourless, translucent substance, perfectly inodorous and tasteless. It floats on water, and has a density of about 0.870, and melts at about 113° to 149° Fah., forming a colorless oil, which, on cooling, again solidifies into a crystalline mass. It boils at about 695°, and volatilizes without decomposition. Paraffin does not absorb oxygen from the air, and is only slowly attacked by sulphuric acid, even at the boiling point of water. It is not at all attacked by dilute nitric acid, and only by the strong acid after prolonged boiling. In fact, chlorine, or any part of our most energetic chemicals, but slowly acts upon this curious substance, which may be considered to be as neutral to the general run of chemicals as our glass vessels. Lately it has been discovered that if paraffin be heated for some considerable time in a tube sealed up, the result is a more fusible paraffin, exactly similar in its apparent chemical composition, but much more soft and fusible—that, in fact, if the heat be continued for a considerable time, the paraffin being still under pressure, we obtain ultimately a perfectly transparent liquid paraffin.—*Scientific American*



# The Photographic News.

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## IMPROVING PYROXYLINE FOR PHOTOGRAPHIC USE.

VARIOUS methods have been proposed from time to time for getting rid of the impurities in pyroxyline, which lead to deranged baths, insensitiveness, and other troubles. Sixteen years ago, M. de la Haye proposed to precipitate cotton from collodion to secure absolute purity; all the impurities soluble in water, and which, being contained in collodion, find their way into the nitrate bath and contaminate it, being, by the process of precipitation and washing, removed. Many years after this suggestion, which never came into use, M. Camuzet made a similar proposal, which attracted considerable attention; but the process was too troublesome and costly for general application. Many years ago we tried, on a smaller scale, giving the pyroxyline a final wash in spirits of wine, and with good results. A recent letter from Dr. Vogel informs us that he has discovered a simple and excellent method of removing all impurities from the pyroxyline, which yields cheaply a better product than Camuzet's precipitated cotton. He contemplates protecting it by patent in this country. The best, simplest, and cheapest method of purifying pyroxyline, which has been published, was described by Mr. Gage, an American photographer, two or three years ago. His plan consisted in boiling the pyroxyline, by which the nitro-glucose and other substances soluble in water were effectually removed from the cotton.

A correspondent of our Philadelphia contemporary sends a suggestion for removing traces of acidity from pyroxyline which, he states, works most satisfactorily. We give the hints in his own words:—

"Dodge: Fume cotton before dissolving for collodion.

"Theory: Cotton, generally, is slightly acid, causing red collodion with even the best of chemicals. Ammonia neutralizes; washing in water and ammonia is troublesome, and takes time.

"Experiment: Made batch of 218 ounces collodion, using 3 ounces cotton; fumed strongly with ammonia, then aired a short time.

"Result: Splendid collodion, which, after three days, has but slight traces of colour, while another batch made at the same time of same amount, with same chemicals, but not fumed, was quite high colour in same length of time."

## M. RODRIGUES' PHOTO-LITHOGRAPHIC PROCESS.

M. RODRIGUES, whose productions have procured for him a medal at the Paris Photographic Exhibition, has just made known to the French Photographic Society the details of his process, in which he employs tin foil for making his transfers to the stone or metal plate. Paper transfers are well known to suffer expansion, to a marked degree, when wetted, and allow, moreover, the thicker lines of ink to be pressed out of shape when the transfer takes place. These, as well as other minor defects, M. Rodrigues claims to have obviated by the employment of tin foil. The author thus describes his mode of operating:—

The tin foil employed is not thicker than a thin sheet of paper. The thinner it is the better, so long as it has not been rolled so thin that it shows minute holes over the surface. Unless it is very thin and supple, it is impossible to obtain fine clear transfers.

The sheet of tin foil is in the first place smoothened by placing it upon an unpolished but finely grained lithographic stone, and subjecting it to a slight pressure. Great pressure makes the metal less supple, and augments its tendency to tear. The employment of a very polished surface prevents the sensitive mixture from adhering perfectly to the metal when applied, whilst, on the other hand, too coarse a grain imparted to the surface interferes with the fineness of the design, and facilitates the formation of patches of greasy ink when rolled.

The tin foil, when rolled, must next be cleaned, and to facilitate this operation it is necessary to put a support under it. For this purpose a zinc plate, perfectly even and well polished, is employed, such as are used in photo-zincography. Its surface is moistened with water, the sheet of tin foil is placed upon it in the same manner as a sheet of positive paper is floated upon a silver bath, taking care not to produce creases or folds, lifting it up, and laying it down a second time if any such should be formed. If they cannot be altogether avoided, they are reduced as much as possible by pressing down the foil in those places, and the superposition of the two metallic surfaces is completed by slightly pressing the surface with a tuft of cotton-wool enveloped in a linen rag and moistened in water.

If the surface of the tin foil appears perfectly clean, it is sufficient to pass over its surface a clean rag soaked in a solution of soda, or potash, of ten per cent. strength. If it is necessary to use a more energetic method of cleaning, a little levigated chalk is added to the solution employed. Washing follows to remove every trace of the chalk, and the alkaline liquid and the bichromated gelatine solution is then applied by means of a very soft brush. This solution is composed of—

Gelatine of fine quality	...	...	40 grammes
Water	...	...	500 cub. cents.

The gelatine is allowed to swell in the water, and the solution afterwards completed by the aid of a water bath. Twenty grammes of bichromate of potash are then taken and dissolved in the same amount of water (five hundred cubic centimetres). When the two solutions have become tepid, they are mixed, and filtered, either through a sponge, or a double thickness of flannel. The best gelatine is that which, under these conditions, becomes a jelly at 20° to 25° Centigrade, without being at the same time very difficult to dissolve.

The bichromated gelatine mixture, spread upon the tin foil by means of a brush, should give a perfectly homogeneous film. The metallic surface should present a very uniform amber tint, without streaks or irregularities, and the coating should not be removable in patches, which indicates defective cleaning in the first instance. One should carefully avoid air-bubbles, which gave rise to small white points, as also particles of dust, every grain of which



attracts, by capillary action, the mixture when still liquid, and thus give rise to circles very lightly covered with the preparation.

As long as the bichromated gelatine is in a liquid state it is not sensitive, and therefore all the operations prior to coating the plate may be conducted in the daylight; but as soon as the gelatine begins to set, sensitiveness begins, and the rest of the work must be done in a studio protected by coloured glass.

It is necessary that the desiccation of the sensitive film be brought about rapidly, to prevent the crystallization of the chromium salt, and the production of any irregularities in the thickness of the layer of gelatine. To do this, the zinc plate upon which the tin foil is lying is heated, either over gas or upon a stove, taking care to keep it perfectly horizontal the while. When the surface has been sufficiently dried the sheet of tin foil is taken from its support, put upon a sheet of cardboard, and heated again to evaporate the water that has served to bring about contact. The tin foil is then ready for exposure under the negative.

Although the prepared tin may be kept for two or three days before being used, it is, nevertheless, best to employ it on the day of its preparation.

An ordinary printing frame is used, and the tin foil sheet is stretched upon the negative, perfect contact between the two surfaces being assured by passing over the foil a roller encased in flannel. Contact during exposure is maintained in the same way as in the case of ordinary positive prints, a little more pressure being employed for the purpose.

It is preferable to expose directly and perpendicularly to the rays of the sun, a pose of five or twelve minutes being the time required, or three times that amount in diffused light. If the cliché has an opaque ground, the exposure may be prolonged without inconvenience; but if, on the other hand, the glass is transparent, and the negative not perfectly clear, then the contrary is necessary. In the latter case success is more difficult, and it is best to operate with a feeble light.

The inking of the exposed print may be postponed till the next day; but it is always preferable to develop with as little delay as possible.

To ink the image, which is equivalent to its development, you commence by immersing the tin foil sheet in a large cold water bath, the impression uppermost, and it is applied in a moist state to a lithographic stone, perfectly even, destined to serve as a support during the process. During the operations no folds or creases must be produced, the design being kept uppermost. The flannel roller is passed over the surface to equalise the surface and to chase away the thicknesses of water between. Sometimes a sheet of blotting paper, well moistened, is applied, so that the absorption of the water may take place regularly. Then you pass over the gelatinized surface a printing roller charged with a mixture consisting of three parts lithographic transfer ink, and one part printing ink. The application of the ink in this way requires practice, for it is a delicate operation, and succeeds with more certainty the greater the skill of the operator engaged on the work. But little ink should be applied at one time, and the operation frequently renewed, and gum should only be employed at times quite exceptionally.

During the operation of inking, numerous accidents may happen. If the ink adheres slowly, and if much difficulty is experienced in applying it, this is because there is an excess of water present, or because the pose has not been long enough. The defect may be remedied by the employment of an ink more greasy and more liquid, although the best plan is to commence *de novo*.

If the groundwork of the image upon the tin becomes dirty, it is covered with a little dilute starch, or with a very weak solution of gum, or the spots may be rubbed with a sponge soaked in gum water. In this way the sur-

face is rendered less attractive to the ink; but this plan may have the effect of making the picture feeble.

If the exposure has lasted too long, and the surface takes up too much ink throughout, the ink is removed by the aid of essence of turpentine, and afterwards gum water is applied with care, and the print thus restored. A film of bichromated gelatine which is too thick is apt to tear under the roller; one that is too thin becomes covered with a veil of black points.

After this first inking, the impression is left for a couple of hours, and a second application is then made, when the surface is washed with a sponge and pure water; the print is wiped very lightly, and the tin foil sheet lifted from the lithographic stone and suspended to dry.

As soon as dry, the transfer is proceeded with in the usual manner. The work requires special care, but any skilled lithographer can perform it.

## COMBINATION PRINTING WITHOUT CUT-OUT MASKS OR PATENT COMBINATION FRAMES.

BY W. T. BOVEY.

A REMARKABLE challenge, issued through the medium of an advertisement, is just now inviting photographers to try issue with the advertiser in a game of ingenuity and skill, the subject of the trial to be "a new invention of photographic combinations;" and the prize offered is a promise that the victor will be told how to do it—he having first discovered for himself the way it is done. Despite the amusing touch of Hybernicism evidenced in so liberal an offer, there may be noticed a deal of good sense and laudable forethought in Mr. Tilley's novel course of procedure, inasmuch as he proves himself desirous of ascertaining the nature of his claims ere he puts his secret into the market. If known by others, he will yield up his claims to originality, and will make his system publicly known; at least, it is so I interpret his meaning.

Now, in answering the challenge so boldly thrown down by Mr. Tilley, I have no intention of asking credit which may belong to the gentleman named. My sole aim shall be to show a way whereby the work of combination can be done, with all the conditions laid down by Mr. Tilley fulfilled.

First. The portrait or group may be taken in the studio in the ordinary way, save in the substitution of a white for the usually adopted background. If judiciously exposed and developed, a negative so taken would, if printed from in the shade, produce a print with background sufficiently untinted to answer all requirements. Remove the print from the frame, and place it upon a sheet of glass ready for the following operation, which must, of course, be conducted in a place where white light cannot gain admittance. Take water pigment (Venetian red will answer famously) finely ground and mixed to a consistency which will enable the brush to leave at each stroke a perfectly opaque coating. With this paint over the image with steady hand and great care. Keep within, rather than straggle without, the outlines of the figures. Dry thoroughly. Then place the paper in contact with the selected landscape, or other fanciful background, and print in the usual way. Withdraw the print from the frame, and, when ready for toning, immerse in water, and it will be seen that the first washing sweeps the entire pigment mask away; and the colour imparted by the gold in toning will be found none the poorer for the treatment, whilst a combination will have been obtained by the adoption of means so simple that any amateur would probably succeed at first trial; and if proper precaution be taken in selecting fitness of parts, a freedom from those incongruities known as contradictory lighting will add to the merits of the picture, which should contain no such outrage on truth and good taste.

It has occurred to me, whilst writing these lines, that a hint borrowed from Mr. Tilley's advertisement might be adopted and carried out in our journals with much of



practical advantage to their readers. Fertility of resource and ingenuity of contrivance are gifts which photographers, as a rule, are lavishly blessed with, whilst their stock of perseverance is proverbial, and their manifold difficulties are frequently conquered in out-of-kind ways. What the result, then, if we culled such experiences in pages that should be devoted to the publication of puzzling conundrums, by the managing director, say by preference, of the *News*? The problems to be stated somewhat thus: "I have a negative with sky, by artificial means, so softly stopped out, that outlines of picture have nothing of scissors to show. How was the masking accomplished?" Brown knows all about the plan, and states how *he* has done it; Jones has been equally successful, although, in comparing methods, he works quite another way; Robinson has essayed to secure such results in many a trial, and burns to learn the secrets that lead to success; whilst all interested in the matter would enjoy opportunities of selecting for themselves the easiest; and ideas thus sown in fresh soil would propagate improvement, most certainly. Then failures might be introduced with a view of culling concealed principles from an examination of the proffered remedies. Fog, stains, stars, comets, together with those etceteras so familiar among photographers' woes, might be introduced in turn, and something new would be obtained from each subject under examination. Many other ways of utilising the plan would naturally occur to every interested mind, and I feel persuaded that a new vigour would spring up among the readers: secret-mongering would sink to a profitless discount, or would yield to what would prove a death-blow. There exist at this time a deal of faintheartedness, apathy, and misgiving in the world of photography; so pray do, Mr. Editor, make a trial of the plan I suggest, by giving space for a series of conundrums, if your readers having anything worthy of offer to show are willing to join in the fun.

### TOBACCO AS A PRESERVATIVE FOR DRY PLATES.

BY WILLIAM HY. WATSON.

No modern art or science can claim so many clear pathways to success as photography; nor can we wonder at this when we consider the numerous processes which spring up almost daily in its practice, and which are noted in our photographic journals from week to week, giving fresh employment for the experimentalist. Of course, according to the number of roads to which we may turn to arrive at the one destination, there will naturally be a little difficulty in selecting from the many that one which we may most advantageously pursue.

The greater portion of my time which I could devote to photography has for some time past been engaged with various experiments on a dry process in which I propose to use a decoction of tobacco as the preservative. As the results which have been furnished me by this process have been very satisfactory, I have much pleasure in sending to the *PHOTOGRAPHIC NEWS* this short notice in explanation, with the hope that it may induce others to give my preservative a fair trial.

The only novelty in the process is in the use of tobacco, in preference to various other substances which have been suggested from time to time for the preservation of the sensitiveness of the photographic film in a dry state. Tobaccos always contain to a greater or less degree various salts which are soluble in cold water, as sulphate and nitrate of potash, chlorides of potassium and sodium, &c., and occasionally, by way of adulteration, sulphate of magnesia, which, although not absolutely necessary, is well to remove from the tobacco before using. I give, as it may be interesting, the result of the number of determinations of these salts in several samples which I have used:—

No. 1.—Bird's-eye ...	7.45 per cent.
2     "     ...     "	8.53     "
3     "     ...     "	7.38     "
4     "     ...     "	5.10     "
5.—Cavendish ...	4.80     "
6     "     ...     "	4.70     "
7     "     ...     "	4.93     "

To remove these salts, add cold water to a portion of the tobacco (it is well to treat an ounce or two in this manner at once, so as to be ready for future use), allow it to stand for a short time, decant off, and "repeat the dose" once or twice, being careful to remove as little of the organic extractive matter as possible. Tobaccos vary in the quantity of nicotine which they contain, but in many cases we find from four to five per cent. In the use of tobacco as a preservative for dry plates, I believe the action is due considerably to this nicotine, which is naturally present. The preparation of the plate is simply this:—The plate, cleaned and coated with collodion, is sensitized in a nitrate of silver bath, slightly acid, and containing about thirty-five grains of nitrate of silver in an ounce of water, drained, well washed with pure running water, and allowed to remain in a body of good rain water while another plate is being prepared in the same way. The plate is again drained, after which pour over sufficient of the preservative to easily cover the plate; allow this to remain on the plate about three minutes, occasionally moving backwards and forwards. Again wash, and finally dry.

The preservative is prepared as follows. Take—

Tobacco ...	20 grains
Gum-arabic ...	10     "
Water ...	1     "

The tobacco should be treated with boiling water, and pressed, the decoction allowed to stand till cool, filtered, and in the filtrate dissolve the gum. I use the gum powdered, as it is much more easily dissolved than in its ordinary lumpy state. I find that plates so prepared may be developed either by the simple pyrogallie acid developer, or by the alkaline process. For the former I prepare a solution consisting of—

Pyrogallie acid ...	3.5 grains
Citric acid ...	6     "
Water ..	1 ounce

To develop by the alkaline method I prepare the following solutions:—

No. 1.—Pyrogallie acid ...	6 grains
Water ...	1 ounce
No. 2.—Bromide of potassium...	12 grains
Water ...	1 ounce
No. 3.—Carbonate ammonia ...	30 grains
Water ...	1 ounce

Proceed as usual.

From what I have seen of the process, I believe that plates prepared according to the above directions will keep months before exposure, and be about as sensitive as those prepared by the Fothergill process. The negatives are clear and brilliant, with a large amount of detail.

A few trials will probably give a better idea of the process than I can by pen and paper. I therefore leave it in the hands of your readers interested in dry plate photography, wishing them success.

### THE PRODUCTION OF GLASS POSITIVES BY THE POWDER PROCESS.

BY J. B. OBERNETTER.\*

To produce a glass positive from a negative in the shortest possible time is often the photographer's wish, and the methods usually employed with the camera, albumen plates, and the collodio-chloride process are more complicated than the manner I am about to describe. The only

\* *Photographische Correspondenz.*



drawback to my method is that a bright day is necessary for the purpose, sunshine being most favourable to the purpose, for on a dull day the time required for printing is too long.

The theory is, that the iron oxide salts are reduced by light to suboxide, which latter are hygroscopic, while the former are not. Iron salts may be produced, which are just as sensitive to light, for instance, as chloride of silver, but with all these salts there are difficulties in the preparation of the plates, and in the powdering of them; for these reasons I do not employ these questionable materials, and will only describe a very simple and trustworthy method of working.

The best sensitive solution, according to my experience, is the following. I prepare a mixture of—

Citrate of oxide iron	...	...	10 grammes
Citric acid	...	...	5 "
Chloride of iron (concentrated solution)	...	...	2 "
Water	...	...	100 "

The citrate of oxide of iron is, in the first place, very finely powdered, and then the three ingredients are put into a glass flask with the water, and the whole boiled during continual agitation; it is then allowed to stand until all the citrate of iron has dissolved, which generally takes place in about five minutes. After cooling, the solution is filtered through paper, and the liquid is ready for use. It will remain good for several days.

To prepare a plate, the glass surface is first of all carefully cleaned with a little kaolin and water; it is then warmed slightly and coated with the solution, the superfluous liquid being poured back into the bottle; the plate is then dried in a horizontal position upon a stove. After five or ten minutes the film has dried with a mirror-like surface, and whilst still warm it is laid in the printing-frame upon the negative and exposed in the sun for eight or ten minutes, or in the shade for about an hour. After taking the impression from the frame, the plate is breathed upon slightly, when, on careful observation by reflected light, the saturation with moist air of the portions of the film reduced by light can be easily watched. A dusting-brush dipped in graphite, or oxide of iron (rouge), is carefully moved to and fro over the plate, and the picture comes up rapidly, and by blowing upon the film at intervals, with due care, any amount of vigour may be secured.

It is easier to dust a cliché of this kind than one of bichromate solution, such as is used for multiplying negatives. There is here the advantage that portions which, by reason of being too strongly breathed upon, have become too dense, may be lightened again by rubbing, when dry, with a clean brush. One need not apply so much graphite to the plate as in the case of chrome films—indeed, very little need be taken upon the brush. One can easily prevent one's fingers and garments from being soiled in the work.

When the picture has been sufficiently dusted, it is covered with normal collodion, dried, and cut round at the margins. The film is then allowed to float off in a bath of water, which happens in the space of three or four minutes, and it is then reversed, and applied to another glass plate in exactly the same way as when negatives are multiplied.

If reversing of the film is unnecessary, the sensitive solution should be applied, in the first place, in a very thin state, diluting it with three or four times its bulk of water. It is covered, after dusting, with collodion to which a little castor oil has been added. The yellow tint is scarcely observable, and the cliché is then varnished.

#### A CONVENIENT DARK TENT.

BY T. C. HARRIS.\*

I give below a description of a "dark tent" for out-door work, which is the best thing of the kind I ever saw.

\* Philadelphia Photographer.

It may not be new to many of your readers, but is too good a thing to be lost; neither is the idea an original one with myself. It is simply this: Make a large bag (say three feet square) of three or four thicknesses of orange calico, and for a bottom sew in a piece three by three feet, same thickness. In the centre of this make a small hole, and work the edges like a button-hole. Now get a small rope about twelve feet long, and pass one end through the hole, and tie a knot in it, and the tent is complete: weight, from three to four pounds.



To use: Pick up two rough sticks about four feet long and as large as the finger; tie them together in the middle with the inside end of the cord, to support the top when hung up. The other end of the cord is fastened to a branch or body of a tree, fence corner, or anything else. The sticks are then turned across each other, so as to hold out the top and sides in the shape of a box. It should be about four feet deep and three feet square or larger, hung up so that about a foot of the lower edge will lay on the ground. The bath, chemicals, &c., are placed inside, on the ground, against the back-wall, and the front side is lifted to get under.

In moving from place to place, the tent can be rolled up in a small, compact bundle, and tied with the rope. I find four-thick orange calico to be ample, and will admit plenty of light to work by, but not fog the plates. A little window of orange glass, four by four inches, can be added, but is unnecessary. One of these tents can be made by anyone, and is really worth a dozen of the unwieldy things sold by stock-dealers.

#### HINTS ON LIGHTING.

BY R. J. CHUTE.\*

This is an old subject; it has been treated over and over again, but so long as our art is practised, and there are those who are striving to learn, its discussion will be not only necessary, but most welcome to many who are seeking for improvement.

The construction and situation of the light is of such importance that it should be the first consideration in erecting or refitting a gallery. It is the basis of all success or failure, and those not thoroughly versed in this direction will do well to look to it for the cause of some of the shortcomings they experience, and which they are endeavouring, in vain, to overcome. I would advise no one to be influenced by this or that theorist as to the arrangement of a light, but rather investigate the causes that have given the greatest success in the photographic art. H. P. Robinson says:—"Some men succeed in spite of difficulties." This we all know to be true, and also that hundreds fail on account of difficulties. Now, in erecting a gallery, the better the light can be applied to the work the less difficulties there will be to overcome, and the more uniformly successful will be the work done under it.

I do not propose, at this time, to give any directions or specifications in reference to the construction of a skylight,

\* Philadelphia Photographer.



but simply to suggest the importance of this department of the studio, and to express my belief that the greatest fault that is general in photographic skylights is expressed in two short words—viz., too high. I know of no one who has ever achieved great success under a high light unless it was correspondingly large; while it will be found that those who have won both fame and fortune have done it under comparatively low lights. Burnett, in his "Practical Hints on Light and Shade in Printing," in reference to "the means by which the painter works," says: "That there is an art in the management and disposition of those means will be easily granted, and it is equally certain that this art is to be acquired by a careful examination of the works of those who have excelled in it." That the above is as applicable to photography as to painting, all will readily admit. The means by which we work, and our success in their management and disposition, determine the quality of art culture there is in us. And as light and shade, exclusively, give all the varied effects we strive for, it is of the utmost importance that we should find, if possible, the best means for using these agents of our will that assume form and place at our bidding, giving the semblance of something tangible in all the beautiful gradations which we see in the best works produced by our art. To do this we have not only to study the works of those who have excelled, but, as far as possible, the means by which they achieved success.

The use of a top and side light combine I have generally been recommended, and probably nine-tenths of the lights in use are so constructed. The side-light is useful and sometimes necessary, but is subject to such abuse that its general utility may be questioned. A low top-light produces every effect desired in ordinary portraiture, and even those not skilled in the art of lighting cannot then easily go astray.

There is a disposition among many to use too much side-light. The effect is very bad in most cases. The beauty of the eyes is seriously impaired by the reflected side-light; the natural shadows of the face are destroyed, and the features either appear distorted, or are weak and insipid. That important feature, the mouth, around which plays so much of sentiment, life, and beauty, loses nearly all its charms under this treatment. The delicate shadows that delineate the exquisite curves and lines of character and expression are quite destroyed; the upper lip is lighted almost equally with the lower, the shadow under the latter is wanting, and if the light on the face is softened to any extent, the whole becomes as near a blank as anything can possibly be and still have form.

Now, the best workers of to-day use side-light very sparingly, and those who have not the fullest confidence in their abilities or knowledge, or have failed to satisfy themselves in their own work, should study the difference between their own and the work of some of those who have succeeded best, and ascertain, if possible, wherein the difference lies.

When full figures were in demand, a fair proportion of side-light was rather necessary, in order that the subject should be properly lighted; but then the effect was considered in reference to the whole form, the face, of course, being the most prominent, but still subject, in a great degree, to other and less important parts. But in these days, when the face is the picture, and the most exquisite modelling is required to give it truthfulness and beauty, success depends either upon the most consummate skill, or vary favourable conditions.

#### HOW TO AVOID UNNECESSARY WASTE OF SILVER.\*

The developings and first washings of the negative are rich in silver, most of which can be saved by using proper means and care. The plan recommended in Anderson's

"Skylight and Dark-room" is about the best, but some simpler method will answer very well. Any large vessel into which you can run the developings and first washings, where they can remain undisturbed long enough to settle, will answer the purpose. The iron in the developer is sufficient to precipitate all the silver held in solution, but it settles slowly. When the vessel is full let it stand a day or two, and then decant what you can; filter the remaining liquid through a cloth or paper filter, and when you have obtained sufficient precipitate to make it pay, you can reconvert it to a workable condition by simply submitting the precipitate to the action of muriatic acid, which will dissolve out the ferro-sulphate, and leave a residuum which is pure silver, requiring only to be thoroughly washed and then dissolved in diluted nitric acid; the acid may be driven off by evaporation, or neutralized, when the silver solution becomes ready for use.

In fixing the negative, some operators prefer to use cyanide of potassium, but hyposulphite of soda is most generally used; in either case a shallow dish or tray large enough to lay a number of negatives in, face up, with solution enough to well cover the same, is the most convenient and economical. By fixing in this manner, the solution becomes rich in silver, all of which can be recovered by the galvanic process; but if you do not like to fuss with a battery and are in no hurry, you can immerse a piece of copper or a copper plate in the hypo or cyanide solution, three or four inches square, and let it remain; the pure metallic silver will be deposited upon the surface of the plate, and when desirable to do so you can scale off the silver, and reduce it with nitric acid, evaporate, or neutralize, and the silver solution is ready for use.

Of course I am aware that there are several other ways of recovering silver from the solutions above mentioned; but the plan here recommended is the most easily managed by the majority of operators. The chlorides, carbonates, &c., are also easily managed; but the sulphurets, &c., require brains and other conveniences, which I do not propose to furnish. A great deal of silver might be retained in a workable condition by using a little forethought. For instance, suppose you obtain a large open-mouth bottle, or other suitable vessel, and place it in some convenient spot. Now, when you rinse out your negative bath holder, pour the first rinsings into the bottle; and when you have done with a filter, just drop it, while wet, into the same bottle. Do the same with blotting-papers, sponges, and, in fact, everything which becomes saturated with the negative solution. By constant additions the contents of the bottle gain volume and strength, and an occasional stirring will reduce the whole to a pulpy mass, which should be strained, and squeezed as dry as possible, and then the weak solution thus obtained can be strengthened with new silver, or by boiling down, and is ready for use either to renew an old, or to make a new, bath.

By making the contents of the slop-bottle tolerably strong of nitric acid, the silver contained in old dry filters, clippings, &c., can be reduced and utilized.

The advantage of some simple plan of avoiding waste must be obvious to any one who will stop to think of the foolishness of "going around Robin Hood's barn" to save a mere fraction of the silver which he has made into a conglomeration which could be avoided with less trouble.

#### THE PREPARATION OF ALBUMENIZED PAPER.

In the *Photographische Correspondenz*, M. J. Homolatsch describes his plan of albumenizing paper, which he has practised for many years with success; he simply floats his paper on albumen, and does not resort to the plan of rolling, which, he says, gives a borrowed gloss that disappears when the paper is washed and toned and fixed. Thirty ounces of fresh white of egg are, according to the amount of water in the eggs, mixed with ten to twelve ounces of water, and forty grains of chloride of ammonium and

\* Philadelphia Photographer.



thirty drops of glacial acetic acid are added; according as the tint of the albumen is light or dark, so a few drops of aniline red are added, and the whole beaten to snow. In a few hours the froth becomes liquid again, and the albumen is put into a bottle to ferment, when the fibrine becomes deposited. The aniline red is added merely for the purpose of neutralising the green tint of the albumen; care must be exercised not to add too much colouring matter, as the prints will then appear rough and mealy.

Before the albumenizing is begun the liquid is filtered through thick linen and filter paper, and is then allowed to remain for an hour, for the air-bubbles to become separated and rise to the top, when they are skimmed off with a bit of blotting-paper.

The paper is placed, face downwards, upon the albumen, and allowed to float until it is perfectly flat. Two corners, which have been bent up, are seized, and the sheet carefully raised and placed to dry. It is now ready, and the drying is finished under a press. It is quite free from smell, and is best used after a few days, when the film has become hard. Cutting and rolling are unnecessary, and are only undertaken when the paper is to be disposed of commercially, any gloss the paper receives in this way disappearing after it has once been put into water. When the liquid becomes thickened after use, it is diluted with an ounce of distilled water containing a grain of chloride of ammonium in solution.

### Correspondence.

#### FADING OF ALBUMENIZED PRINTS, AND PERMANENCY OF PLAIN PAPER.

DEAR SIR,—The fading of our photographic prints is one of the prominent subjects of the day. Like many of my brother amateurs, I have been annoyed, but only occasionally, by the loss of colour and brilliancy in some of my best specimens. After careful observation and experiments, I am decidedly of opinion that prints on albumenized papers fade, when those on plain salted do not. The subject is an interesting one, and, by comparing notes, something satisfactory may be arrived at.

I may state that I have not had a single case of fading when the toning has been done in the sulphocyanide bath, as given in the PHOTOGRAPHIC NEWS in 1867.—Yours, &c.,

AN AMATEUR.

#### SENSITIZED GELATINO PELLICLE.

SIR,—I hope others will give their experiences with Kennett's pellicle. His paper was so positive as to the certainty of his gelatine emulsion that I considered it my duty to try it. The following were the results.

I coated some plates, and put them to set on a levelled piece of glass, then dried by heat. I found them sensitive enough, and got an image by reflected light, but next to nothing by transmitted light. This doubtless would have been all right by after-development; but what I could not get over was the tendency of the film to blister. When I attempted to wash it, a coating of opaque network came over it, and then it slipped from the glass in a rotten state. I tried several plates, but all were alike. I took every care and followed his instructions most carefully.

When I first saw the instructions, my heart failed me on account of the numerous alterations in ink and extra instructions written on the back. I also thought that greater care was requisite in packing the little box of paper—one thin and scanty covering of white paper.

Mr. Joshua King talks of the tendency of gelatine emulsion to blister in a most unaccountable way. It appears to me that unless the film is firm and stable, the process is useless.—Yours faithfully,

W. J. C. M.

#### MR. WOODBURY'S PHOTO-MECHANICAL PRINTING PROCESS.

SIR,—In your last issue you printed specification of patent taken out by me for improvements in photo-mechanical printing, to which you preface the remark (true in one sense) that this invention was only provisionally protected. As this would cause your readers to suppose that the patent had thus become public property, I beg to state that such is not the case; a "de novo" patent having been applied for before the time at which this one could be made public causes it to be legally valid.

To prevent any misunderstanding, I beg you will publish this statement,

WALTER B. WOODBURY.

Greenlith, July 13th.

#### COLOURED GLASS, ETC.

DEAR SIR,—Finding Mr. Nicol's habit of quibbling incorrigible, and only likely to tend to interminable disputation, and that he condescends to pervert my meaning, I should not have considered further reply necessary; but as those of your readers who may not have had an opportunity of considering the question might, from the tone he assumes, think that his words had weight, or are, in fact, any more than mere clamor, I point to the letter of Dr. Vogel, who cautions that the theory to be obtained from the examination of stained glass will not hold good as regards the colours of the spectrum. One moment's consideration will prove this to be only a reasonable conclusion, as the latter, always emanating from the same source, must, under similar conditions, prove identical; whereas stains, dyes, and pigments, derived from so many various substances, each having its own peculiarities, can be subject only to their own laws. Blue has been used to lower the tone of the colour of the light admitted into the so-called dark-room with beneficial effect, but, of course, there must be sufficient to bear the dilution. A blue varnish might be used, and prove inexpensive; in any case, a little colour is required.

My caution respecting the measures was based upon experience gathered whilst making inquiries concerning them. Should it be considered obtrusive or unnecessary, I must plead that Mr. Nicol's example has proved infectious. As regards the weight of water, I reiterate, that the quantity of water calculated as to the old measure is correct; but provided that the twenty-ounce pint be used, the denomination of the product will, of course, be different.

I consider this discussion is now closed.

The hot weather we have experienced points out the necessity of some regulation for preserving the health of the working portion of the photographic community, and I was much pleased to read the very valuable papers of Dr. H. Napias, as also the remarks concerning the health of photographers in the PHOTOGRAPHIC NEWS of the 10th inst., which are virtually identical with what I have written on the same subject.

In my next letter I shall resume the subject of the interior of the dark room.—Yours truly,

JAMES MARTIN.

5, Clarence Place, Ilfracombe, July 14th.

#### THE HEALTH OF PHOTOGRAPHERS.

SIR,—In an article on health in connection with photography, you say that the dark-room window cannot be opened between the developing of each plate when much work has to be done. This is a mistake, as, when the baths are provided with proper covers (mine are attached to the dippers, and there is, therefore, no loss of time in using them), the window may be thrown open immediately the plate is developed, and the air of the room gets well changed while washing and fixing. This does not interfere with a succession of plates as rapid as can be used by the posing operator.



Another point you mention is, the necessity of a mid-day meal; which, you say, is only taken by stealth in some establishments.

I trust that such houses are exceptions. I never knew of one where so little consideration was shown to the employees.—I am, yours obediently, W. E. DEBENHAM.

158, Regent Street, July 14th.

[We referred to some establishments in which two operators were engaged in one dark-room, in which it was not possible to open the window much without interfering with one or the other. Where one operator has control of the room, he can, and, doubtless will, open the windows between each plate.—Ed.]

## Talk in the Studio.

**IMPERIAL RECOGNITION OF PHOTOGRAPHY.**—English photographers, it seems, can compete satisfactorily with Continental artists in royal portraiture. The following letter has been forwarded to Lord Torrington, relating to some very admirable portraits and groups of the Emperor of Russia and his daughter, by Messrs. Downey, of London and Newcastle-on-Tyne:—"MY LORD,—I am instructed by His Imperial Majesty, the Emperor of Russia, to acknowledge the receipt of the photographs which were executed by order of Her Majesty the Queen, and forwarded by Messrs. Downey through your Lordship; and I am desirous to express His Majesty's high approbation of the same.—I have the honour to be, my lord, your lordship's obedient servant, BRUNNOW."

**BIRDS, NOT BANDS.**—At the annual meeting of the National Photographic Association of America, just opened at Chicago, we learn that a feature of the exhibition would be the substitution for the band, which on such occasions makes night hideous and day unendurable, of a large lot of singing birds, with their cages hid in the boughs and flowers used for adorning the hall. The exhibition was to open on the 14th of July, and continue until the 18th.

**FINED FOR PUBLISHING A PHOTOGRAPH.**—M. Apert, a photographer in Paris, has just been sentenced to a fine of 100 francs for publishing without authority a photograph representing the majority of the Prince Imperial.

**NEW METHOD OF COLOURING METALS.**—Metals may be coloured quickly and cheaply by forming on their surface a coating of a thin film of a sulphide. In five minutes brass articles may be coated with any colour, varying from gold to copper red, then to earmino, dark red, and from light aniline blue to a blue-white, like sulphide of lead, and at last a reddish white, according to the thickness of the coat, which depends on the length of time the metal remains in the solution used. The colours possess a very good lustre, and if the articles to be coloured have been thoroughly cleaned by means of acids and alkalis, they adhere so firmly that they may be operated upon by the polishing steel. To prepare the solution, dissolve  $\frac{1}{4}$  ounces of hyposulphite of soda in 1 pound of water, and add  $\frac{1}{4}$  ounces of acetate of lead dissolved in  $\frac{1}{2}$  a pound of water. When this clear solution is heated to from 190 to 210 degrees Fah., it decomposes slowly, and precipitates sulphide of lead in brown flakes. If metal is now present, a part of the sulphide of lead is deposited thereon, and, according to the thickness of the deposited sulphide of lead, the above colours are produced. To produce an even colouring the articles must be evenly heated. Iron treated with this solution takes a steel-blue colour; zinc, a brown colour; in the case of copper objects, the first gold colour does not appear; lead and zinc are entirely indifferent. If, instead of the acetate of lead, an equal weight of sulphuric acid is added to the hyposulphite of soda, and the process carried on as before, the brass is covered with a very beautiful red, which is followed by a green (which is not in the first-mentioned scale of colours), and changes finally to a splendid brown, with green and red iris-glitter. This last is a very durable coating, and may find special attention in manufactures, especially as some of the others are not very permanent. Very beautiful marble designs can be produced by using a lead solution thickened with gum tragacanth, on brass which has been heated to 210 degrees Fah., and is afterwards treated by the usual solution of sulphide of lead. The solution may be used several times.—Iron,

## To Correspondents.

H. H. K.—There are a great many methods of photographing on wood for the purposes of the engraver, all more or less efficient. It would be impossible to describe any of them in detail in the column apportioned to answering correspondents; but you will find one of the best processes described in full in our issue for June 3rd, 1870. The process there described does not leave any film of collodion or other substance in the wood. Should you not succeed with that, write again.

AMATEUR.—Silver is usually sold by troy weight.

F. H. W. B.—Pyrogallie acid when kept in aqueous solution is apt to spoil, and lose developing power. You will best ascertain by trying the stock you have; but when it has turned a dark brown there is not much hope. You need not, however, be in any difficulty, for your ordinary iron solution may be used for intensifying. Many of the ablest photographers simply add a few drops of silver solution to the developer, and intensify with that. If it readily decompose when the silver is added, add a little acetic acid as well, which will check the decomposition.

BUSY BEE.—We cannot tell you whether there are any of the panoramic cameras in use at the present time. Mr. Johnson's was undoubtedly the best, and produced some very fine results. We do not remember certainly who is the agent at the present time; but you would learn of the Autotype Company, Rathbone Place.

POPE.—For mounting prints in an album we should use a thick solution of india rubber, applying it only to the edges. The prints, if properly managed, will be as flat and firm as if mounted by pasting all over. They will not cockle, and can be removed at any time without injury if it be desired to make a change in the album.

T. H. REDIN.—Thanks. It is tolerably clear, we think, that the depth in the paper of the sensitive impression is much dependent upon the amount of soaking which the paper received in the different stages of preparation. If, in albumenizing, the paper be floated sufficiently long, the chloride present will be absorbed into the texture of the paper. Such paper, when floated on the silver bath, will readily form chloride of silver in the texture of the paper, and the image will be found there after printing. The conditions of brilliancy depend much on keeping the image on the surface; hence paper albumenized by rapid floating—or, rather, simply drawing the paper over the albumen solution—will generally yield the most brilliant prints. Long floating on the silver bath will also tend to give an image in the paper. If you print with the back of the albumenized paper in contact with the negative, you will obtain an image right through the texture of the paper.

VINDEX.—The ownership of the copyright depends on two or three things. If a photographer procure a model or sitter to sit to him for his (the photographer's) own purpose, then the copyright rests in the photographer without any agreement; but if a sitter come in the ordinary way of business for a portrait, then it will be necessary to obtain an agreement in writing in order to secure the copyright to the photographer, and no registering will secure the copyright without such written agreement.

HENRY EDWARD.—We cannot devote further space to the subject. We shall hear no more of the *soi-disant* "M.D.," whose trick was so easily and completely exposed. You should remember the remark of a late American President: "It is no use wasting ammunition upon dead ducks."

HOPE.—Pinholes in negatives may proceed from many causes, excess of iodide of silver being the most common. It is possible to have a new bath over-iodized. Besides this cause, turbidity and floating particles in the nitrate bath; a turbid developer; collodion not perfectly settled, and similar causes, will cause pinholes; but, without tracing one cause after another, we cannot guess which is in operation in your case. To stop them out in the negative, use a fine, short-haired sable pencil and a little cobalt blue.

F. T. D.—The yellow spots on the two cards and cabinet so closely resemble those produced by the bronze powder used in printing, that we should have no hesitation in assigning them to that cause. Have you any examples mounted on cards in which the gilt printing is not employed? The soaking all night which you describe would be better avoided, as it tends to set up a decomposition in the sizing matter of the paper. 2. There is additional chance of permanency gained by the use of the ammonia. 3. The tear-drops we should be disposed to attribute to splashes of silver in the plate from closing the shutter of the dark-slide hastily.

G. AIMEE.—We do not know the precise address of Dr. Napias.

Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED

Mr. J. HAWKE, Plymouth,  
Three Photographs of Sampson Lloyd, Esq.

Mr. L. WESTON, Dover,  
Photograph of Earl Granville Opening the New Docks at Dover.  
Photographic Group of Earl Granville and others.



## The Photographic News, July 24, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### WHERE TO GO WITH THE CAMERA.

Where to go with the Camera.—Photographers should lose no time in making up their minds where to go with the camera, for the summer will soon be on the wane, and we shall have September and October upon us before six weeks are over. Shall it be the chalk hills and green woods of Kent, about Boxley, or along the grassy banks of the Medway, by Maidstone and Watlingbury, or the shady lanes and apple orchards of Devonshire, or the rocky headlands of Cornwall? If the sea-scapes here are too wild and lonesome to please, and foliage and picturesque cottages are sought for, to relieve sea and sky, there are North Wales and North Devon which will be more to one's taste. The pastoral scenes of Derbyshire, the lakes of Cumberland and Westmorland, and the stretches of undulating country in Yorkshire, have their admirers; while the border counties of Wales well repay exploration by those who love quaint little towns, wooded slopes, and lazy streams flowing past green landscapes, and shady nooks tapestried with ferns and flowers. Scotland, with its broad moorlands and picturesque glens, its placid lochs and silver-grey peaks, will draw many over the border; and, if it were not for the lengthy hotel bills one has to pay occasionally, it would be the most favourite tour of all. *Point d'argent, point de Suisse*, is an old and true saying; but *Ecosse* might very well be substituted for the last word now-a-days.

To those who go abroad, there is more choice of scenery, although travelling on the Continent, as many will agree with us, is not pleasure unalloyed. If unacquainted with the language of the country one visits, it is always necessary to keep to big hotels and frequented districts: and, besides being always in an atmosphere of Paris, Berlin, or London, according to the nationality of the numerous visitors around, you are compelled to pay dearly for everything you have. You need not, however, be a very learned linguist to make your way, for a knowledge of practical matters is all that is necessary. Every year the beauty spots of the Continent are brought more nearly within our grasp, and centres such as Paris, Cologne, Bale, &c., may be reached very speedily, whence one's destination may be afterwards be easily attained. Switzerland, the Tyrol, the Rhine, the Pyrenees (although, with the Carlist war raging just now, it is unlikely many will like to risk their lives in that part of the world), and the pretty forest districts of Mid Germany are all of them within eight and forty hours of England. Even Norway may be reached overland (in great measure), through Cologne, in three days, as rapidly, therefore, as the journey may be done across the North Sea, and with much more comfort to those who are not sailors. Switzerland and the Tyrol can be attained by the new Luxemburg line to Bale, in shorter time and with less fatigue than by way of Paris, no change of carriage being necessary all the way from Ostend. Unfortunately, the journey is at present an expensive one, costing a five-pound note, for the quick trains are only first-class. Tourists should bear in mind that if they desire to travel economically they must beware of the more popular districts. People go to Lucerne, Interlaken, Chamonix, the Rigi, Geneva, and other places, simply because they hear of others going; but there are spots quite as charming and grand as these, both in Switzerland and the Tyrol, where one is not always moving in a crowd of tourists, and where you may live in moderation. In some parts of the Grisons, in Appenzel, in the Vorder Rhein Valley, and about Chur and Wallenstadt, there are districts to be visited which possess all the finest characteristics of Swiss scenery;

and if you but cross the grand Stelvio Pass, the highest, and, we think, the grandest, in Europe, there is the Tyrol beyond you, where you may wander at will and never be called upon to pay more than half the amount for bed and breakfast than the Lucerne and Interlaken inn-keepers ask you. There is snow-hooded Ortler Spitz within stone's throw, and the magnificent Crystal Glacier sweeps down to the road side, while from the head of the pass, which is a thousand feet above the line of permanent snow, hundreds of magnificent peaks are to be seen. The Finstermünz Pass, the tiny lakes of Graun and Reschen, the beautiful Oetzthal Glacier, may all be visited in a week, only the traveller must be prepared to rough it a little, and make shift to live for a while on omelettes, trout, and good red wine, for little else is sometimes obtainable. The valleys of the Engadine on the confines of Switzerland, Italy, and the Tyrol, are becoming every year more fashionable; and as the Prince of Wales intends spending a few weeks there this summer—at St. Moritz—the claims of modest travellers will cease to be considered. To those who prefer the depiction of architecture to that of mountain and valley, there are many quaint towns to be visited nearer home than Nuremberg and Prague, which are oftentimes quoted as full of models for the photographer. He will be very clever, however, if he is able to produce pictures for business purposes, and compete with local artists with all their advantages. There are Antwerp, Ghent, and Bruges, and other towns in Flanders and Belgium where time may be profitably spent; or, again, the old cities of Normandy and Brittany, with their old churches and cathedrals, may be visited. One always prizes a picture taken oneself more than a print which is purchased, for, besides the interest otherwise attaching to it, the fact that it has been secured from a point of view with which you are familiar often makes all the difference. Besides, when one has had a pleasant holiday ramble, what can be more pleasant afterwards than to look over pictures taken by the way, each of which recalls to mind some pleasing reminiscence, or some amusing story?

#### FRENCH CORRESPONDENCE.

IN a letter dated the 13th July, the committee of the French Benevolent Association for Photographers inform me that they have unanimously decided to forward the following letter to their medical adviser, Dr. Napias:—  
“DEAR DOCTOR,—We are charged by the executive committee, in the name of the Photographers' Benevolent Association, to inform you that an unanimous vote of thanks has been given you for the valuable advice contained in your paper published in our organ, the *Moniteur de la Photographie*, upon the sanitary aspect of our studios, and upon the means to be adopted in the case of accidents taking place among us. With our most sympathetic thanks, and in the hope that you will continue a work so well begun, we beg you will receive our heartfelt conviction that you will not cease to have the good of our society at heart, and we greet you, happy and proud to be numbered amongst your friends.

(Signed on behalf of the committee)

“E. FONTENELLE, *President*.

“BERTHOLST, *Secretary*.”

I am sure that the readers of the PHOTOGRAPHIC NEWS who have become acquainted with Dr. Napias' work will read this letter with pleasure, and agree with the sentiments expressed therein.

Under the title of *L'Achromatisme Chimique*, M. Prazmowski has just presented to the Academy of Sciences a note bearing importantly upon photographic optics. Charged by M. Janssen with the construction of an apparatus of considerable dimensions for photographing the transit of Venus across the sun's disc, M. Prazmowski occupied



himself first of all with the conditions of optic achromatism to be given to the whole of the optic system. The principles which govern the manufacture of photographic lenses cannot be applied to instruments destined for the depiction of astronomic bodies. An optical lens is one which unites at the point brightest to the eye the luminous rays and those which exercise the most powerful actinic action. In this way is obtained a mean result which gives precision to the optical image without the photographic image having all the sharpness possible. The coincidence of the two foci facilitates the operation of focussing, and gives to the photographic image a certain softness, very desirable in portraiture, but not so in photo-astronomy.

It is known that to obtain the most satisfactory achromatism to the eye, one should not attempt to unite the extreme colours of the spectrum, but only those that affect the most powerfully the organ of vision; in photographic achromatism it is only necessary to take into account that portion of the spectrum where the chemical action is most strongly marked. The range of the chemical spectrum is well determined, but it varies according to the nature of the bodies traversed by the light. It is more especially to this point that MM. Janssen and Prazmowski call attention. They have executed some photographs of the spectrum by means of prisms of flint and crown, which are to be employed in the construction of the lens and eyepiece, or rather of the apparatus for enlarging the image given by the lens; and these pictures prove that the most powerful action is produced at that part of the spectrum comprised between the lines G and H. Beyond H the action is less sensitive, and rapidly ceases. Between F and G the rays are very sensitive, but much less energetic than between G and H. The most perfect photographic achromatism, according to M. Prazmowski, results from the union into one focus of the rays G and H, encroaching a little upon the interval between F to G.

After these experiments, it remains to find the curvature of the lenses. M. Prazmowski has followed the principles laid down by the eminent mathematician Broet. According to him, the essential condition to obtain a perfect lens is the stability of the axial and lateral achromatism, and this stability is only assured by central contact between the two glasses that compose the lens. It is perfect when the two interior surfaces are in contact throughout their whole surface, and this condition can be satisfied by exercising a proper selection in the materials employed.

M. Prazmowski has, therefore, commenced to study with care the properties of the crown and flint glasses which he proposes to employ, and he has calculated, by means of trigonometry, the curvature of the rays. In his lens the marginal rays are absolutely achromatic. The achromatization of the centre is not so perfect, but the small error existing is inappreciable.

Photography, which should, now-a-days, form part of education, at any rate in polytechnic schools, if not at all, is only taught in France, just now, at special institutions, such as the *Ecole des Mines*, *Ecole d'Application du Genie Maritime*, *Ecole Central des Arts et Manufactures*, and at the *Ecole des Pont et Chaussées*. When I say taught, I go, perhaps, a little too far, for, in the first three establishments mentioned, the instruction is confined to a short course of lectures. It is different, however, at the *Ecole des Pont et Chaussées*, where our art is practically demonstrated and theoretically explained by M. Davaune. This gentleman is provided with everything necessary for teaching photography in a most complete manner, and his great experience, as also the zeal that he feels in the matter, make him fully qualified for the post.

The course of lectures given by M. Davaune at the *Ecole des Ponts et Chaussées* has just been published in a pamphlet of fifty-four pages. In this limited space we have one of the most complete and useful operating manuals, which

will, no doubt, enjoy a large circulation. The author first gives a concise and very impartial history of photography, and then proceeds to detail the manipulations necessary in the production of negative and positive impressions. The first part of these divisions contains four chapters devoted to the wet and dry collodion processes, collodio-albumen, collodio-tannin, waxed paper, and other processes; and in the second part the author treats, first of all, of positives, and silver salts, and residues; and then passes to printing without salts of silver, but by means of bichromated gelatine, the carbon process, Woodbury process, helio-engraving, photo-lithography, and enamel photography.

M. Davaune devotes, moreover, two chapters to the employment of iron salts and bitumen of Judea, and terminates with a formula which may be taken as the resumé of his work. The two formulæ which the professor has chosen among those published of the wet collodion process are the following:—

*First Formulæ—Normal Collodion.*

Rectified sulphuric ether	... 650 cub. cents.
Pyroxiline...	... 10 to 12 grammes
Alcohol at 40°, added by degrees,	300 cub. cents.

*Iodizing Liquid.*

Absolute alcohol	... 250 cub. cents.
Iodide of ammonium	... 10 grammes
Iodide of cadmium	... 10 "
Bromide of cadmium	... 10 "

Filtered through paper.

Ninety cub. centimetres of normal collodion are taken, and to this are added ten to twelve cub. centimetres of the iodizer, and a tiny flake of iodine, to give the mixture the colour of Madeira.

*Second Formulæ—Collodion.*

Rectified sulphuric ether	... 300 cub. cents.
Alcohol at 40°	... 200 "
Pyroxiline...	5 to 6 grammes
Iodide of potassium	... 1 gramme
Iodide of ammonium	... 1.75 "
Iodide of cadmium	... 1.75 "
Bromide of potassium	... 0.25 "
Bromide of ammonium	... 0.50 "
Bromide of cadmium	... 0.50 "

The iodides and bromides should be finally ground before being added to the collodion. M. Davaune adopts a seven per cent. dipping bath, and develops with an iron solution thus made up:—

Double sulphate of iron and ammonia	50 grammes
Ordinary acetic acid	... 50 cub. cents.
Alcohol at 36°	... 50 "
Ordinary water	... 1000 "

In the ten per cent. silver bath for positives, M. Davaune puts a few drops of a solution of carbonate of soda. Into the gold toning bath of one per mille strength, he puts five grammes of French chalk.

For mounting—a very important part of photography, as everybody knows—he uses—

Water	... 500 cub. cents.
White glue	... 12 to 15 grammes.

After boiling for ten minutes, thirty grammes of starch are added, diluted in a little water, which is boiled and strained through a muslin sieve.

In conclusion, I may repeat that, as every one might expect, M. Davaune's modest looking volume is one of the most useful and complete manuals that have hitherto been published on the subject of photography.

ERNEST LACAN.



## HOW TO MAKE A POCKET CAMERA.

BY W. J. LANCASTER.\*

DRY plates may be prepared in so many different ways, that one is at a loss to know which process to describe, and which to dispense with. It is an astonishing fact that one process works admirably with one person, and with another, working apparently similar, it gives nothing but foggy pictures—pictures without any depth, negatives with no detail. It is from this fact that I have determined to give some half-dozen processes, leaving the amateur to choose that process most suitable to his taste, and to work at that one until he shall obtain good and lasting results. I have known so many amateurs who try every new process, and yet never succeed with one, although they may have a cupboard full of pure chemicals, which, with careful attention, would produce charming results, that I must beg of my readers to take one process and stick to it. One of the simplest processes with which I am acquainted is the coffee process. The method of working is the following:—

First, provide yourself with some patent plate glasses, or some polished sheet of good quality. Clean them well. This is very important, and may be best done by rubbing the glasses with methylated spirits of wine upon a piece of cotton-wool. Allow the spirits to evaporate, and then polish well with a good chamois leather. Secondly, procure some good bromo-iodized collodion, to which may be added, if necessary, a small quantity of a solution of bromide of cadmium; it should be a firm collodion, one that will not give a reticulated appearance to the plate; neither must it be too thin. Care must be taken to obtain a collodion which will not peel off the plates. After collodionizing the plate, it must then be lowered into bath, the solution in which should contain about 35 to 40 grains of silver per ounce; then carefully, but without any stoppage half-way, lift plate out of bath and examine its surface, plunge into bath again, examine plate about once every half minute, and finally, after leaving plate in bath from three to five minutes, take it out and swill it well with distilled water. This may be done by immersion in a dish, or by pouring the distilled water out of a jug into the plate. In the latter case quickness is an essential to obtaining good dry plates. The plate is then coated with the following solution:—Coffee 2 parts, gum 1 part, sugar 1 part, hot distilled water 20 parts. This should be made about one hour before using, and should be filtered. The solution may be poured over twice, and the plate placed in a drying frame, or reared up in a box or covered space to prevent dust adhering to its surface. The plate may then be backed, or a piece of black cardboard gummed on to back to prevent light passing through plate to opposite plate when in dark slide. I usually place a piece of thin cardboard of a dead black appearance between two plates in dark slide, and find it answer in most cases quite as well as backing. The plates require from three to five times the exposure of a wet plate. The development of all dry plates is so similar, that I intend leaving instructions for development till the end of paper. In the preparation of dry plates by the following process, the same precautions are necessary as for coffee plates. In fact, the processes differ only in the composition of the preservative applied after plates have been taken out of bath and well swilled. The tea process is similar to the coffee, the preservative being composed of 1 ounce of best black tea and 16 ounces of hot distilled water. These plates do not keep so long as the coffee plates. They require development within two days after exposure to bring out their best results. Care must be taken not to allow sugar or gum of any kind to be mixed with the tea. The tannin process requires a similar collodion and bath as the coffee process. The plates,

after being well washed, are coated with the following solution:—Distilled water 36 parts, tannin 1 part. The tannin solution should remain on the plate from thirty to forty seconds. The gelatine process differs slightly from the processes mentioned, the plates requiring a much better washing, to do which they should be placed in dishes filled with distilled water; they may be also changed from one dish to another, so as to entirely remove all traces of silver, after which coat the plate with the following solution:—Distilled water 100 parts, best gelatine 1 part, alcohol 10 parts. This solution should be heated and poured on the plate while hot. The gelatine must be dissolved in boiling water. The solution must then be filtered before cooling.

The hot water process is a very simple one, and consists of an application of a solution of albumen in water upon the plate after it has been well washed. The plate coated with the albumen must then be placed in a dish of hot distilled water for thirty to forty seconds, afterwards allowing it to dry in a box or other place free from dust.

The collodio-bromide process consists of the application of an emulsion containing the collodion and silver mixed in proper proportions as per following formulæ:—Alcohol 5 ounces, ether 10 ounces, pyroxyline 2 drachms, bromide of ammonia 1 drachm, bromide of cadmium 2 drachms; to this must be added the following solution: alcohol 7 ounces, nitrate of silver  $\frac{3}{4}$  ounce. This solution must be boiled to dissolve the nitrate of silver. The alcohol should be added to the silver, and decanted at intervals after being boiled. The whole should then be allowed to cool, and mixed with the collodion of the formulæ given above. There is no necessity to make so much of the solution as given above, but the solution will keep, and there is as much trouble in making a small quantity as there is in a larger quantity. I should recommend that it should be kept in three or four small stoppered bottles; it is also advisable to keep a small stock of solution No. 2 to add to the emulsion a short time before using. After pouring the emulsion on the plate, it must be then washed well with distilled water. Ordinary water is a source of many failures, and after washing the plate, pour on to coated surface a solution of tannin of the following formulæ:—Tannin 1 drachm, alcohol 1 drachm, distilled water 4 ounces. The plates must then be carefully dried, and may have a piece of black paper gummed on their backs, or be coated with a solution of asphalt.

The development of dry plates, most preferable, is the alkaline method, which consists essentially of a solution of ammonia and bromide of potassium with pyrogallie acid. Make a solution of distilled water 1 ounce, liquid ammonia 1 drachm. Put it into a stoppered bottle, and label it "Am." Then into another bottle put 1 ounce of distilled water, and bromide of potassium 3 grains; into a large stoppered or cork bottle put distilled water 10 ounces, pyrogallie acid 1 drachm. The bottle containing bromide of potassium to be labelled "B.P.," and the bottle containing pyrogallie acid to be labelled "Developing Solution." After the plates are removed from the dark slides a solution of spirits of wine and water, about two of the former to one of the latter, should be poured over plate; or, what is far preferable, is to have a dish containing the mixed spirits and water, then to place the plate quickly into this dish, allow it to remain twenty seconds, then take out and wash well under the tap until all greasy marks disappear. The developing solution should then be poured on plate as quickly as possible, and should consist of 2 drachms of developing solution, 3 drops of ammonia solution, and 2 drops of B. P. solution. The drops from small bottles should be put into a glass measure, and the pyrogallie poured on them, thereby insuring a perfect mixture; it should then be flooded over plate, and great attention must now be paid to appearance of plate. If the picture flashes out instantaneously, then pour developing solution back into measure, and add

\* Concluded from page 315.



2 drops of B. P. solution. If, on the other hand, the picture appears flat and very slow in development, add 1 drop of ammonia solution. The picture may be worked up to any density by the addition of drops of ammonia solution, but I should suggest that amateurs should work with a weak solution until they can thoroughly master the development. I have many times developed plates entirely with the above developer, and with great success; but one must have recourse to the addition of nitrate of silver to the development for obtaining intensity, where the alkaline fails to give the amount required. To do this the plate must be well swilled, and then have a solution of citric acid poured over its surface, then swilled, and ordinary pyrogallie acid and silver may be applied to finish the development. The fixing solution may be either a solution of hyposulphite of soda, or the ordinary cyanide of potassium solution. I prefer the latter, which always gives a sharper picture.

With this I conclude the articles on Pocket Camera, and I trust my instructions have been intelligible and useful to those amateurs who intended constructing a camera.

### DISTORTION.\*

It is understood, and taken for granted by many who are intimately connected with or practising the business, that a photograph is always correct. The impression has gone abroad that "the camera cannot lie," and all pictures recognized as photographs command implicit confidence; they are accepted as indisputable evidence in courts of law. It is said of a picture of an individual that it must look like him, for he sat for it; notwithstanding, his most intimate friends protest that it is not like him. Now, some of the causes that are productive of evil in this direction are generally over-looked. In the case of a portrait sitting, of course, the skill of the artist in posing, lighting, &c., has much to do with the truthfulness of the result; but there are other causes that should claim the attention of all photographers, especially in work that requires great precision, such as reproductions of maps, plans, geometrical drawings, or anything of that kind; and these are to be found in the contraction or shrinking of the negative film and the paper after printing and toning.

Dr. Vogel, writing in the June number of the *Philadelphia Photographer*, in reference to photographing the transit of Venus, speaks of the importance of obviating, if possible, the contraction of the film. To this end he has recently investigated the subject, and found that the contraction varies considerably with different samples of cotton. He says: "There are samples of cotton which contract very much, while others possess this quality in a lesser degree. I found that thick collodion contracts the most, while the limpid ones much less. The contraction varied also with one and the same sample, according to its concentration. The same collodion which, with two per cent. of pyroxylene, showed a contraction, did not show any with one and a half per cent."

In reference to this same subject he writes also in the *Photographic World* for July, 1872, where he says:—"Rutherford works on albumenized plates, and states that with these no contraction takes place, and the author has tried these also. His experiments gave, however, a result which proved the opposite. The collodion on albumenized plates showed a greater contraction than on plain glass."

From this we should infer that a cotton made at rather a high temperature—the powdery, short-fibred cotton—would be best for work requiring great exactness. A collodion also that has become thoroughly ripe gives a less contractile film than a freshly made sample.

Ordinarily, however, the variation in the film presents no serious difficulty, except in astronomical photography, or

where a copy of a map or drawing is to be enlarged from a small negative. But we would suggest that, where nicety and precision are required, a plate somewhat larger than the impression to be made be used, so that the image may come on the centre of the plate where the film is of a uniform thickness. This will permit the film to shrink on all sides alike, and though there may be contraction there will be no distortion.

But the greatest variation is observable in the paper prints, where the shrinkage is sometimes so great as to utterly preclude the idea of correct measurement or proper proportion. We have seen a stereoscopic head—one inch in size, perhaps—where in one impression the head was nearly one-eighth of an inch smaller than the other. One had either expanded, or the other had contracted. One was fat, the other was lean. We have seen many portraits of friends that did not look right, and have no doubt that many of them were distorted from this very cause.

It is a matter to which photographers should give attention, and adopt such measures as will obviate the difficulty as far as possible.

### GLASS WOOL FOR FILTERING.

BY DR. J. SCHNAUSS.\*

OUR readers have no doubt heard of this new product of the glass industry. Till now it has been possible only to draw out glass in threads of appreciable thickness; but now, by altering the composition of the glass mass, it has been found possible to spin it as fine as silk, and afterwards beat it together like felt. From this substance all sorts of ladies' knickknacks are made, such as lace, feathers, and even hats; and chemists also employ it for useful purposes. To put into paper filters, for instance, especially when caustic and corrosive liquids are under manipulation, it is of great value, for it prevents these substances coming into contact with the paper and destroying them.

To the photographer, in this connection, this glass wool would also be valuable, for how frequently is a glass bath ruined from the fact that the filter paper which he has employed is not altogether chemically pure! Again, no inconsiderable quantity of silver solution is lost from being absorbed by filter paper after repeated operations.

A little glass wool pressed together, and stuffed into the upper part of a funnel, will suffice for the filtration of many silver baths; and when at last the wool becomes dirty from the accumulation of reduced silver and other impurities, then a little strong nitric acid is poured through it, and this at once dissolves and removes all solid matter. Washing out with distilled water will then render the filter as useful as ever.

For the filtrations of other liquids the glass wool is equally suitable, such as sulphuric acid, caustic potash, chromic acid: indeed, in these cases, it is without a rival. Its cost is rather heavy, being as much as six shillings an ounce; but it must be remembered that it is as light as feathers, and consequently a quarter of an ounce will last a very long time.

### PHOTOGRAPHY AT THE ANTIPODES.

BY J. H. B.

Adelaide, South Australia, May 18th.

ALTHOUGH, in this remote corner of the globe, we have but little opportunity of seeing the progress made in photography in Europe, beyond what we can gather from the columns of the *PHOTOGRAPHIC NEWS* and other publications, and we may probably be in the dark as to many matters connected with the art, I venture to offer a few Antipodean remarks, some of which may not be entirely

\* *Photographic Times*, U.S.

• *Photographisches Archiv*.



without interest, perceiving that I write as an amateur who has practised photography for twenty-six years, commencing with the Daguerreotype process in 1848.

In this colony there are several professional photographers, and a fair sprinkling of amateurs; and it is a matter of surprise that so many of the former are able to gain a living in so small a community, as the prices they charge for portraits are by no means high. Occasionally I have seen what I have been able to designate pictures produced by some of them, but generally their productions are simple photographs—good, perhaps, in point of manipulation, but destitute of expression, feeling, or any artistic quality. A great distinction must, I think, be made between a photograph and a photographic picture: the former is the mere result of what may be termed a chemico-mechanical process, to a great extent left to its own action; while the latter is a genuine work of art, produced, it is true, by similar means, but in this instance guided by refined taste and artistic ability.

It is to be regretted that so few of the works of the artistic photographers of England and the Continent find their way to this colony, as a study of them might stimulate some of our operators in an endeavour to improve their style. I am aware that their chief object as professionals is to satisfy their customers at least cost to themselves, and I know also that artistic taste in South Australia is quite down to zero; but if our photographers had any taste or ambition about them, they would not be deterred from producing works of a higher class merely because it would not pay. These remarks have reference to portraiture; in other branches the professionals do little or nothing, and the views I have seen have generally been more deficient in artistic qualities than the portraits; all kinds of incongruities existing in them, such as figures standing in rows staring at the camera, streets taken exactly in the centre, the camera not four feet from the ground (giving them the appearance of being viewed by a person in a sitting position), blank white skies, insufficient exposure and development, and consequent want of detail, *cum multis aliis*.

It is difficult to imagine a country affording less good subjects for the landscape painter or photographer than this does. There is great sameness and insipidity about it. Nearly all the trees are of the same hue, and very similar in foliage and general appearance; and the almost entire absence of water, and the existence in all the settled parts of interminable straight lines of post and rail fences, are not conducive to pictorial effect. However, some pleasing bits may be obtained by a person possessing an artistic eye, who will exercise judgment in selecting proper positions for the camera, and times of the day when the effects of light and shade are good. I think I may safely say that twenty days in a year do not pass here without the sun showing himself. As a general rule the sky is without a cloud all day, and it would be inferred that the actinic power of the light would be very great; but, judging from the exposures given for certain dry plates in England, and that which I have found necessary here (the only means I have had of forming any opinion on the subject), it would appear to be comparatively feeble. It is possible, however, that I may be mistaken, and that the extreme dryness of the atmosphere renders the dry plate processes slower here than in England, where, even in the driest weather, the air is charged with moisture.

This climate is very favourable to printing operations, the extreme aridity causing the sensitized paper to become perfectly dry and crisp in less than fifteen minutes without artificial means, and the uninterrupted sunshine admitting of a large number of prints being secured in a short time. The great heat of summer (sometimes 156° in the sun, and 120° in the shade) produces difficulties both in the negative and printing processes, which, however, are not insurmountable.

## ALBUMEN AND CASEINE AS PRELIMINARY COATINGS.

BY CARL LUCKE.\*

IN reference to M. de Constant's method of handling dry plates, I may, perhaps, be permitted to describe my plan of applying an albumen substratum. I am quite agreed with M. de Constant that the coating of a plate which happens to be wet on both sides, the plan usually adopted, is certain to bring about contamination of the silver bath. To render a glass suitable for the application of albumen, I proceed in the following manner.

I filter, in the first place, my dilute albumen solution, twice, and pour a quarter of it into a very clean glass vessel which is large enough to contain a two-inch or a two and a half inch flat camel's hair brush, such as is usually employed for dusting negatives. By means of this brush I coat, stroke upon stroke, the polished glass plate, and then pour from a lipped cup, which contains the remainder of the albumen (almost touching the plate) as much of the liquid as may be necessary to coat it. The superfluous liquid is allowed to run into the glass containing the brush, so that when the solution in the cup has been exhausted, it may be filtered twice and used again. The coated plate is allowed to drain thoroughly, and then placed to dry, standing upon a double sheet of filter paper.

By adopting this plan of coating the plates with albumen, there is no repelling action of the albumen, which runs over the surface of the plate as readily as collodion. The brush and glass vessel, after being employed, must be thoroughly cleansed, as one can very well understand.

A little while ago, I found that even with the most careful handling, my substratum of albumen produced little black spots upon the picture, just as if grains of sand had been strewn over the plate. For this reason I made some experiments with caseine, and my experience of employing this material is very favourable, for I have used it in my work with great success. The negatives obtained with a substratum of this material are exceedingly clear and fine, and the substance seemed rather to increase than diminish the sensitiveness of the collodion film.

My caseine solution I prepared in the manner following. Ten ounces of unboiled milk (measured by volume) are diluted with five ounces of distilled water, and coagulated with a few drops of acetic acid. The caseine is allowed to separate, washed twice with distilled water, and then the whole is collected upon a linen filter. The caseine remaining upon the filter is pressed thoroughly, and first washed with alcohol, and then with ether, to remove all traces of fatty matter. It is again filtered and pressed, and then dissolved in five ounces of ammonia and three ounces of distilled water, the liquid being filtered and put away for use.

Before coating the cleaned and well-polished glass plates, one part of this caseine solution is mixed with three or four parts of water, filtered twice, and then applied in exactly the same way as the albumen solution.

There is one peculiar advantage in this method of applying a preliminary coating to the plates. After the surface has been covered with caseine, and this has dried, the plates may be dusted without any risk, so that it is possible to coat plates long before they are wanted. Every care should be exercised to keep them as free as possible from dust; but this, unfortunately, will make its way into the best constructed plate box.

It is a question whether caseine could not be advantageously employed in the preparation of dry plates, and I hope that those gentlemen who suffer from the defects of an albumen substratum will give caseine a trial.

\* *Photogr. phisches Archiv.*



# The Photographic News.

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## TRUSTWORTHY FORMULÆ AND CAREFUL MANIPULATION.

WE print a letter on another page which may be said to be fairly representative of a large number of communications we receive. Our correspondent complains that the formulæ published by successful workers in the different branches of photography are often insufficiently precise to enable others to follow them, and secure similar success; and he refers to, and sympathises with, a complaint by a former correspondent, to the effect that he found it impossible to secure anything like the rapidity with various dry processes which their originators, and other workers, generally claimed for them. As we have said, the complaint is a very common one, and we naturally enquire, what is the legitimate remedy? There cannot be a doubt that precision in statement of formulæ is imperatively desirable, and that accuracy in the statement of the claims and qualities of any new process will save much disappointment. These facts scarcely need stating. But in looking for means of removing the cause of complaint to which we have referred, we must first ascertain whether the defects are really more due to the formulæ and those who propound them, or to those who apply the formulæ, and fail in working them out with perfect success. Possibly the causes of non-success may be, to some extent, divided; but it may be necessary to remind many photographers, in working out a process the details of which they have seen published, that the originator of a process is, as a rule, working for his own purposes of pleasure or business, and that when, with the liberality which has, fortunately, always characterized the best men in photography, he publishes the details for the benefit of the photographic community at large, he generally describes precisely his own usual mode of working. If, for instance, he says, "Add a few drops of silver solution to the developer," it is because he himself adds "a few drops" which are not counted, and may be eight, ten, or twelve. And so with many similar matters. The very fact that absolute precision is not employed in stating formulæ is fair indication, as a rule, that absolute precision in applying it is not necessary, but simply an intelligent apprehension of the general instructions. As a rule, the originator of a process, in describing it, is under the impression that he is addressing men more or less familiar with the class of processes of which he treats. He is too often, perhaps, under the impression that his readers possess experience somewhat similar to his. If he wrote

with the conviction that he was addressing many who are inexperienced, he would, probably, aim to be more precise. But in order to attain this precision it is probable he would in many cases have to repeat his operations for the express purpose of weighing, measuring, and otherwise noting accurately—a task involving an amount of time and care which, if necessary before describing a process, would often be sufficient to deter the experimentalist from publishing his process at all.

Let us glance at the case to which our correspondent especially refers, the beer and albumen process of Captain Abney, described in our last YEAR-BOOK. Some additional precision in statement might have been of value; but we cannot but think that little difficulty need be experienced in following the instructions given. The fact that, as our correspondent alleges, there is a vast difference in the manufacture of beer, is a sufficient reason why Captain Abney could not be precise in his description of the beer, as he would probably employ the ale regularly used in his household, the precise constitution of which he did not know, and the nearest approximation would consist in using the ordinary article known as pale ale, a potation most commonly used in the community. Possibly it would have been well to have been more specific, if possible, as to the quality of the malt liquor; but the probability is that most samples of ale would serve. As to the preliminary coating, there cannot be a doubt that a two-and-a-half per cent. solution of albumen means a solution of two ounces and a half of albumen to one hundred ounces of water. The statement that a plate is washed for a minute or two under the tap implies at once a slight latitude, and would suggest one minute, say, for a stereoscopic plate, and two minutes for a whole plate. Again, in directing a "final wash" of beer and albumen, after the statement that the first portion must remain half a minute on the plate, would at once suggest to us that the final wash simply consisted in flowing the preparation over the plate and off again. We have no doubt that Captain Abney will have pleasure in assisting our readers by the statement of any additional or more precise details which may be useful, and we should be well pleased if at all times experimentalists would use the utmost precision in stating formulæ and manipulations; but we feel it important to suggest that, as a rule, the details of a process being given to the public in the form the originator himself has worked them out, any insistence upon some different form, requiring re-examination of the operation, would often issue in non-publication altogether.

The failure of many photographers to obtain results equal to those obtained by the originator of a process is a troublesome problem with which we can scarcely deal fully now; but we may remark that, in relation to many of the dry processes for which rapidity has been claimed, that we have been present at various competitive trials, in which dry plates, worked as we have described at the time, have produced good results with exposures varying from that of an ordinary wet plate to three times as long; and that in the hands of a really careful and experienced worker like Mr. R. Manners Gordon, almost any dry process has produced good results, and, in its best conditions, rapid results; the gum-gallic process and the modified collodio-albumen process certainly not requiring more than three times the exposure of wet collodion with iron development.

## PHOTO OLEOGRAPHS.

OUR esteemed correspondent, Mons. Ernest Lacau, has more than once called attention to a mode of colouring portraits, which, under the name of "neo-oleo-painting," has recently obtained considerable vogue in Paris. It is not a little curious that in principle this method appears to be identical with one of the earliest plans of attempting to colour photographic portraits, a plan which has been



patented over and over again in this country. It was patented as early as the year 1852, and within fifteen months of the first patent two other specifications for precisely the same method were lodged at the Patent Office. In each instance the plan is described as consisting in making the photograph transparent by means of wax or varnish, and then, after being roughly coloured at the back with oil colours, mounted on paper or canvas, or any light ground which should give purity to the lights of the transparent coloured picture. In some cases this process was modified in after years by using two prints instead of one. A vigorous impression, being somewhat roughly tinted with vivid colours, was covered by another delicate impression, which had been made transparent, the latter being either placed in direct contact with the coloured print, or separated from it by a plate of glass, upon which the transparent print was often mounted with transparent varnish.

It is tolerably clear that by such a mode of colouring no examples of high art could be looked for, the artistic qualities of the finished work being chiefly bounded by those possessed by the original photograph. But it is also clear that pictures of excellence equal to that which is found in very much of the coloured photography which is issued may be so produced, and that they will at least possess all the fidelity of likeness and accuracy of drawing possessed by the photograph: qualities not unfrequently in some degree lost in the ordinary modes of colouring. In fact, photographs coloured in this way bear relation to an artist's work somewhat similar to that which belongs to the popular form of picture known as an oleograph, the results being, in point of fact, very similar. Photographic copies of good pictures printed on thin paper made transparent, coloured at the back, and then mounted on canvas so as to show its texture, as it is seen in an oil painting, might with advantage be produced, and while they might be made a popular form of art, could possess real educational value only second to that possessed by the original paintings themselves, they might at the same time form a valuable commercial branch of the photographer's business. Most of our readers are familiar with the details, both as given on former occasions in our pages, and as more recently described by Mons. Lacan. We may, however, for convenience of reference, repeat his account of an interview with M. Pettemans, as sent to our Philadelphia contemporary. After showing many fine examples, M. Pettemans coloured a picture in M. Lacan's presence.

"Here is exactly what he did. He took a positive print on ordinary sized albumen paper, and placed it on a retouching glass (sterolor), face downwards. It was the portrait of a man, album card size, rendered transparent similar to an image on wax-paper. He then opened a box in which were a dozen of those small metallic tubes containing the oil colours used by painters, a porcelain palette, a few fitch brushes, and two vials, one full of the liquid in which is first plunged the images to render them transparent, the other containing picture varnish. The operator placed on the palette a little each of brownish-red, blue, dark-brown, and prepared pink flesh colours; then on the end of his brush he took a little of the first tint, and put some of it on the back of the image in the places corresponding to the cheek bones, to the lips, and the shades in general. He operated in the same manner with the blue, which he applied under the eyes, around the outlines of the cheeks in the half tones; he laid on liberally the dark-brown in the place corresponding to the hair; finally, on the whole of the face and over all the tints already used he spread the flesh colour. He then removed the print from the glass, turned it over, and I saw a modelled painting with a proper gradation of colours, exactly similar to those that I had seen exposed in the gallery through which I had just passed. The operation had not lasted five minutes.

"It is certainly not the first time that prints have been coloured on the back so that, seen by transparency, they present the aspect of paintings, the photographs forming the drawing, and consequently the resemblance, if it is a portrait; but the former method required the hand of a more or less skilful artist. What is truly original in the process of which I speak is, that it is no longer necessary to know how to paint, or even to draw, to apply it; any ordinary workman, a child even, can perform it successfully. The tubes containing the colour are numbered, and it suffices to know that such a portion of the face corresponds to such a number, to make use of it properly; and this is learned in a lesson. It is the flesh colour, more or less light, yellow or red, and which is spread finally on all the other tints, which gives the particular character of the carnation, according to the person who has posed.

"I must add that when the colours are dry the print is laid upon canvas and pressed, so that the paper is moulded on the tissue, reproducing the hollows and reliefs so that the colour appears to be really on the canvas itself; varnishing ends the operation."

Another less familiar application of the idea of making one photograph transparent and placing it over another vigorous image, but in monochrome, has recently been revived. Some years ago the plan in question was patented in this country by Messrs. Lee and Thompson, and has on several occasions been brought forward, rapidly to disappear again from public attention. At the present moment some examples of this kind are exhibited in the photographic department of the International Exhibition at South Kensington, by Herr Stahala, as "chromo photographs." The method of producing such prints was recently described at a photographic meeting at the Institute in New York, by Mr. Koans, of Karlstadt, N. J., who also used the term "chromo-photographs," in his case less inappropriate, because they are occasionally finished in colour. The details are thus given:—

"Two prints are made from the same negative, one on albumen paper, the other on plain; the last one is printed only far enough to show all details. By any varnish, thinned a good deal by spirits of turpentine, the albumen print is made transparent, and fastened to the inner side of an oval convex glass. This is done by a thick mastic varnish, or any colourless gum, as Canadian balsam, &c. Care has to be taken in this operation to get rid of all air-bubbles. Another oval convex glass is put at the back of this print, and the plain paper one is moved behind this glass till both prints appear like one; then a piece of white cardboard furnishes the back, and the whole is fastened together around the edges by sticking paper, and put in a suitable frame. For colouring these pictures, the prominent features—as eyes, lips, and the finer details in dress—are coloured on the back of the transparent albumen print, with thinner water colours; the rest is done on the plain print by dry colours being rubbed on pretty strong."

#### EDUCATING THE EYE.

THE sight of one good picture is frequently more instructive than volumes of essays upon art principles, and no form of education is so valuable to the photographer as the frequent opportunity of seeing really good work. Perhaps nothing has so admirably illustrated this fact as the influence on the general quality of photography, especially in portraiture, exercised by the exhibitions of the Photographic Society during the last half-dozen years. Seven years ago such portraiture as adorned the walls of the gallery in Pall Mall last autumn was utterly unknown in this country. The resumption of the society's exhibitions in 1867, and the display of a series of the then scarcely known gems of Mons. Adam-Salomon, gave, we have no hesitation in saying, an impulse to photographic portraiture in this country such as it had not received before; and the quality of the work exhibited from year



to year has gone on improving, until now it seems a though it were scarcely possible to go beyond the best results recently exhibited. Photographic exhibitions are unquestionably the most efficient educators of the eye which can be devised, and if the Photographic Society had done nothing else for the art, it has laid all lovers of photography under a great obligation for the impulse to higher excellence which has been given by the society's exhibitions of the last few years. Such exhibitions are, however, only accessible in London, and at annual intervals, and they may, possibly, in the disorganized condition of the society, not be held again in a hurry, and our immediate object is to suggest to some of our readers other methods of obtaining valuable aid in their aim to advance in their art.

One of the most serious difficulties in the way of the young photographer in remote provincial districts is the want of standards of excellence before his eyes. With such standards, and the resolve to equal them, progress would be always certain, and often rapid. Without such standards it is possible to steadily work in the same groove for years, without alteration or improvement, the photographer acquiring, however, by long familiarity with his own work, an impression that it fulfils the ordinary conditions of good photography. Scarcely a week elapses that we do not receive examples of work upon which our opinion is asked, sometimes with hesitation and doubt, sometimes with a full conviction that it is of average excellence; the examples sent being, in a large number of instances, lamentably lacking in all the best qualities which a picture should possess. The senders, in a large number of cases, manifestly lack the educated eye which can distinguish a good picture from a bad one; and without this perceptive and appreciative power how is it possible that excellence can be attained? To educate the eye, then, is one of the first steps to excellence, and this education of the eye can only be obtained by familiarity with good work. Metropolitan photographers, and photographers in large towns, possess an immense advantage in the facilities they enjoy over their brethren in remote districts, and whose needs we have specially under attention at the present moment. There is, unfortunately, no organized method whereby the educational aids can be supplied. A correspondent of an American contemporary some time ago suggested the formation of an association amongst photographers, something like the Early English Text Society, and similar associations in this country, the aim of which should be to supply to all the members one or two superb photographs every year, in return for a subscription of from two to four guineas annual subscription. The idea is by no means an unattractive one, and for the subscription proposed, at least half-a-dozen very perfect examples might be supplied instead of one or two. Whether such a scheme would answer, if initiated, we cannot say. If such a project were successfully carried out, it would unquestionably have a valuable educational influence. Failing any project of this kind, however, we should urge upon young photographers, who have little opportunity of seeing the work of first-class men, the importance of losing no opportunity of purchasing fine examples for study and imitation: we mean imitation as to excellent qualities, not as to details. It would be a boon to such young students if some of the masters in the art would undertake to supply studies and examples at a reasonable rate. Failing this, the best plan is to select and purchase such examples of published portraiture as may possess qualities worthy of study and imitation in lighting, composition, arrangement, tone, &c. There are few photographers so remotely placed that no opportunity of this kind occurs to them; and having before us the evidence of its necessity in many cases, we urge upon all beginners and students in the art, to secure the primary condition of improvement and excellence, that education of the eye which comes from careful study of good examples.

### COLLODIO-CHLORIDE PICTURES.

THE main reason why the beautiful results of the collodio-chloride process are so seldom secured appears to be due, the *Photographisches Archiv* remarks, to the great instability of the chalk-paper usually employed as basis, as also to the circumstance that this particular paper is not adapted to photographic use.

A paper when it is newly received often yields good results, and after a while the pictures begin to show white spots over their surface, a defect which is always due to the paper, and need not be sought for in the collodio-chloride process itself.

To the above drawbacks may be added, in summer, the circumstance that the film easily rises from the paper, an inconvenience which cannot wholly be set aside by the addition of resin or oil of turpentine to the collodion, or by the use of cold baths.

Many skilful operators, who employ the collodion paper in large quantities, say that a first result will often succeed, while others produced subsequently are defective. The best substitute for chalk-faced paper would, no doubt, be one with a highly glazed surface of insoluble gelatine. Experiments conducted with transfer paper, made by Liesegang for the carbon process, give good results, collodion pictures produced on it being very beautiful, and their tone more pleasant than those printed upon chalk-paper. Moreover, when warm baths were used for toning, there was no trace of the film being dissolved away from its support. The gloss obtained with pictures of this kind was equal to that of albumenized prints.

The manufacture of a paper of this kind would, therefore, doubtless bring about an increased demand for collodio-chloride paper. Much trouble would be spared the photographer, and the public would obtain durable pictures with whites free from silver.

### PHOTOGRAPHIC IRRADIATION OR "BLURRING."

THE precise nature of the varied causes which produce a blurring of the outline, or spreading of light at times in the photographic image, has not yet been satisfactorily determined, and continues to be the subject of some discussion in *Nature*. When, a few years ago, the subject was discussed in photographic journals, it was dogmatically assumed by some to be solely due to reflection from the back of the plate; and as the use of a non-actinic pigment to the plate was found to be a cure in the majority of cases, this solution of the difficulty was generally accepted. The fact that a similar blurring or halation was sometimes present in Calotypes and Daguerreotypes where no reflection from the back of the plate could exist, was not worth discussing in the face of a cure based upon the reflection theory. The importance of freedom from such defects in photographic observations of phenomena like the Transit of Venus has again directed attention to the question amongst scientific experimentalists, and hence the discussion in the pages of the contemporary to which we have referred.

Mr. J. Aitken, to whose experiments we have before referred, writing to *Nature* again, and referring to the matter, says:—

"The conclusion to which these experiments pointed was, that there is a kind of photographic irradiation, caused either by the bright light producing an intense state of chemical activity, which has the power of extending itself in every direction; or, what seems more probable, the parts of the collodion on which the bright light is falling become luminous and reflect light to the surrounding parts of the sensitive film, and thus extend the chemical change on each side of the true optical boundary line. As the subject is at present under discussion, I send you the results of the following experiments, which seem to support the above conclusion. In a darkened room a vertical opening 18in. by 6in. was made in the shutter; over the opening was fixed a piece of



paper thick enough to stop most of the light, and only allow as much to pass as would give a decided, but not deep, photographic impression. Three long, narrow, parallel openings were cut in the paper; one opening was left clear to the sky, the next was covered with one thickness of tissue paper, and the third with two thicknesses of tissue paper. There was thus produced three parallel bars of different brightness on a uniform and darker ground. Sensitive wet plates were prepared in the usual way on glass and opaque black plates; across the front of the plates, and almost in contact with the collodion, was fixed a horizontal bar of thin blackened metal in such a position that it would cross the image of the luminous bars in the camera. The photographs, after exposure, were developed in the usual way, and it was found that the shadow cast by the horizontal opaque bar was not bounded by straight lines, but the ends of all the bright bars projected into the shadow, and the brighter the bar the farther it projected. I had no means of measuring accurately the bar and its shadow, but there seems but little doubt that the bright bars extended underneath the opaque bar, whilst the edge of the darker ground at the side of the bright bars gave the correct line of the shadow. Now this extension of the bright bars could not have been caused by the reflection from the back of the plate, as this result was always got, whether glass or opaque black plates were used. Nor could it have been caused by the oblique pencils referred to by Lord Lindsay and Mr. A. C. Ranyard, because, the opaque bar being close to the collodion, these pencils could not get underneath. The natural conclusion seems to be, that this extension of the bright bars must have been caused by some molecular reflection taking place in the collodion. This form of irradiation can easily be distinguished from the irradiation produced by reflection from the back of the plate, as the latter is simply a sort of haze surrounding the bright object, extending some distance from it, and gradually fading away, whilst the former extends a very short distance and has a well-marked outline, though not so sharp as those parts of the image where there is no irradiation. The irradiation produced by reflection from the back of the plate, and some forms of irradiation due to the imperfections of the lens, though fatal to artistic photography, yet do not interfere much with its scientific value, as they do not affect the accuracy of outline, though they do affect the clearness of the photograph. Molecular irradiation, on the other hand, whilst it scarcely affects artistic photography, is fatal to scientific accuracy. The manner of preventing this latter form of irradiation has been already pointed out, namely, by reducing the intensity of the light falling on the sensitive surface to only that necessary to produce a distinct impression. In artistic photography this is almost never possible, on account of the different amount of light on the different parts of the subject, while for scientific purposes this may almost always be done. The imperfections of the image due to the lens seem to be as various as the forms of lenses. One lens used in the experiments gave a curious double-hazy image of the bright object. When the image is near the centre of the 'field,' the double image fits over the true image, producing an effect somewhat similar to, and was at first mistaken for, the effect of reflection from the back of the plate. At first this double image was somewhat puzzling, as it always made its appearance, even when opaque plates were used. The two images were, however, afterwards separated by bringing the true image near the outside of the 'field,' when the true image and its double were photographed alongside of each other.

"The following simple experiment illustrates this molecular form of irradiation, and shows how much the definition of the image depends on the nature of the surface which receives it. Take a camera-obscure and throw the image on some translucent substance, such as opal glass; paint a small part of the glass with some opaque white substance; bring into the 'field' some brilliantly illuminated subject, such as branches of trees, against the sky; examine the image from the lens side of the glass, when it will be found that the image over the opal glass is hazy and indistinct, whilst the part of the image on the paint shines out brilliant and sharp."

Mr. A. Cowper Ranyard, writing in a subsequent number, says:—

"For the purpose of determining whether any sensible amount of the photographic irradiation surrounding the image of a bright object could be traced to an action taking place within the thickness of the collodion film, I some time ago tried an experiment in many respects similar to that detailed by Mr. Aitken in your last number. A piece of cardboard with four parallel narrow openings, each some 12in. long, was hung against the glass roof a photo-

graphic studio so as to be projected against the background of a bright sky. One of the slits or openings was covered with a piece of red glass, another was glazed with blue glass, the third was left entirely uncovered, and the fourth was covered by a piece of thin tracing paper. The slits in the cardboard screen were carefully focussed, and over-exposed photographs were taken with a camera in which no stops were used. Upon the collodion film, and immediately in contact with it, was laid a piece of platinum-foil quite thick enough to be perfectly opaque. The camera was so placed that the images of the slits fell partly upon the platinum-foil and partly upon the collodion film. I have now before me two of the plates, each taken with an exposure of five minutes. The first was coated in the ordinary manner with a single collodion film, but the other was coated three times successively with collodion, so that the film was rendered very thick; but the eating in or encroachment of the photographic images of the slits under the platinum-foil is hardly perceptible in either plate; indeed, I feel that I cannot say with certainty whether there is any encroachment of the image proper, though there are very marked brush-like extensions from the ends of the images, as well as a cloudy semi-circular field symmetrical with the end of each image, evidently arising from reflections from the back of the plate. At first sight the brush-like, semi-opaque extensions might be taken for the ordinary photographic irradiation eating under the platinum-foil; but on more closely examining the ends of the images, the hazy opacity is seen to extend farther in some directions than in others, and to be broken up in some cases into five or six little streams or brushes. The decrease in the opacity of the brushes is also less uniform than the decrease in the opacity of the ordinary irradiation border. The brushes extend to a distance of about 0.2in. under the edge of the platinum foil.

"I do not at present see my way to devise an experiment which would determine what is the cause of these little brushes, nor have I at present had an opportunity of repeating a similar experiment with the dry plate process; but the brushes have the appearance to me of having been produced by streams in the delicate film of liquid, which must extend under the platinum, streams which probably carry with them little masses of light-altered silver, that are soon deposited or strained out in the spongy tissue of the collodion.

"If the spreading action under the platinum foil were caused by light dispersed within the thickness of the collodion, one would expect such action to take place symmetrically around the place where the bright image is cut off instead of being broken up, as I have described, into bundles or brushes. On the other hand, slight differences in the texture of the collodion, or minute inequalities on the edge of the platinum foil, might cause the streams in the liquid film to move more easily at one point than at another.

"I should be glad to be informed what was the distance of the opaque bar from the collodion plate in Mr. Aitken's experiments, and whether there is not any photographic trace of diffraction bands, owing to the bar not having been in focus; possibly the presence of these may account for the apparent difference in our results. It will be seen that the experiment which I have described points to the same conclusion as that formerly announced by Lord Lindsay and myself, viz., that the inner photographic diffraction edge is chiefly due to the imperfection of the instrument producing the image, chief among which is to be counted the aberration of oblique pencils."

Mr. W. J. Stillman, writing on the subject, says:—

"Mr. Aitken's observations on photographic irradiation in *Nature* are confirmed by many experiments I have made. I spent a long time in efforts to get rid of irradiation in bromide of silver films, one of the results of which I stated in a former note to *Nature*. There is the most striking difference in the behaviour of films containing iodide of silver only to those containing the bromide alone, the latter, especially when dry, giving much greater irradiation; and the difference is again complicated by the addition of certain substances (notably albumen) to the film in the course of preparation. As my experiments were mainly with dry plates, I will leave out of question the forms which the phenomenon may assume in wet-plate photography, and summarise the results of hundreds of experiments with dry plates iodized, bromo-iodized, and bromized.

"With a simply bromized film the amount of irradiation is extreme. The film is very translucent, and the irradiation is of two kinds, that caused by reflection from the back of the plate being by far the most extensive, but remediable by the usual expedient of coating the back of the plate with red or black colour, while the form noticed by Mr. Aitken is perhaps partially



inherent in bromized films, but to a much greater degree dependent on the nature of the pyroxyline. Two samples of pyroxyline made at different temperatures, and treated in precisely the same manner, differ so much, that while one will, with the coloured backing, give scarcely a perceptible degree of irradiation, the other will develop it to an extent which no backing, nor even tinting the film with the aniline reds, will obviate. The former is generally a compact, lustrous film, scarcely to be distinguished from the glass itself, while the other (both being used without preservative solution) will give a dull and dusty-looking surface, only capable of reflecting at very small angles. If with the latter a strip of blackened wood be laid on the film so as to cut across the lightest portions of the image thrown on it by the lens, the effect of the light will be found to spread behind the strip of wood sometimes to the extent of a centimetre; but I have never noticed the sharp limitation of this form of irradiation which Mr. Aitken observes, and which probably depends on the wet state of the film. It is clearly, as he supposes, an agitation which is set up in the film, and which depends for its propagation amongst the surrounding molecules upon a kind of chemical transparency in the film holding the bromide of silver. That this is to a great extent true is shown by two experiments. 1. A film which, in its simple state, gives considerable halation, will, when coated with albumen, especially if coagulated with nitrate of silver, give none at all, or very little, though the ocular transparency is rather increased than diminished by the albumen. 2. An emulsion prepared by exposing it to the action of nitrate of silver until it becomes structurally decomposed, and highly charged with bromide of silver, shows absolutely no irradiation under any circumstances, even if the glass be not backed, and no kind of preservative used. The film in this case resembles unbaked porcelain in its whiteness, entire want of lustre, and in opacity, and the molecules of bromide of silver are more than usually free from any restraining influence which a preservative might be expected—reasoning from the usual action of the albumen—to exert. In these two cases of extreme translucency and opacity of the film, there is almost an equal freedom from the phenomenon in question.

"In the old albumen process with translucent films the irradiation is imperceptible, and in the collodio-albumen, where the film of albumen is allowed to remain on the collodion, it is almost so; but in this case, as in all cases where the film is charged only with iodide of silver, there is another element which complicates the action. The bromide of silver is reduced *in situ* while the iodide requires a supply of silver from the developer from which to build up the image, in the one case the deposition being by reduction, in the other by accumulation. This alone would account for a wide difference in respect to irradiation, but will not account for all, as is proven by the diverse results obtained from different bromide films, due to the varying structure of the material which holds the bromide in place.

"What Mr. Aitken calls 'molecular irradiation' (and which is not by any means the harmless thing he considers it in regard to artistic photography any more than to scientific) is unquestionably the great enemy of all photographic precision. It seems, however, to be complicated with what I have been obliged to call structural irradiation, alluded to above, and depending, as I have said, on the mechanical, rather than the chemical condition of the pyroxyline of which the bulk of the film consists. The subject yet demands much investigation, of a purely empirical character, in order to determine the quality of vehicle for carrying the sensitive salts, neither chemical analysis nor chemical analogy affording any indication of the true cause of the difference between the two qualities of pyroxyline I have noted, nor do they, so far as I am aware, account for the difference between the action of collodion and albumen."

## THE NECESSITY OF PLEASING.

BY F. WALLER.\*

Much has been written and more said—especially of late—about the difficulties which beset a photographer's path. It is true they are manifold, and no one is more aware of them than the writer; but are not most of these obstacles to success, artistically and financially, of our own creation? Do we start with the fundamental idea of pleasing all who come? If we do not we are wrong, for this is an absolute necessity. It may seem difficult, but it is not impossible. It may be wearing upon your temper, or even seem to be

upon your pocket, at first; but the end will justify the means. Therein is the key to pecuniary success, which merely waits upon artistic merit.

Many complain that the public do not want, and will not take, good work. I never yet saw that class of people. Elevate the class of your work to the highest; your customers will progress with you. Please them, and in almost every case you will please yourself. Remember that when you present a picture to a patron it is the likeness he looks at; that is what he has come for. Yours is the task to see that in pleasing him you please yourself. All that is pleasing in a bad picture will be more so in a good.

When we reflect upon the vast quantity of wretched work which has been rammed down a forbearing public, "willy nilly," through the years that photography has become general, is it any wonder that sometimes our customers "kick in the traces"? The time has gone by for fighting your customers. Try the other road—please them. There is an old saying and a true one, "You catch more flies with molasses than vinegar." Re-sit them when they desire it, and if you have a good photograph they do not appreciate, try them with a better one. Do not (as the practice often is) exult over their ignorance, and when they sit again make them a poor one, because their taste and yours may differ.

One thing is certain: no matter how good a photograph may be, it can be improved upon. There is no goal in art; the highest on the ladder have still another round to climb. As a mere matter of policy, then, it appears that you must please your customers. The "art of pleasing," as the French term it, is open to all, and nowhere can it be better used than in photography.

## Correspondence.

### SENSITIZED GELATINO PELLICLE.

SIR,—It is a curious fact in photography, that in all new processes, where there is the slightest chance of making a muddle, the process itself, and not the muddler, is sure to be at fault.

I am sorry to find from a letter written by "W. J. C. M." in your last week's issue, that I have been the cause of some uneasiness to him, for not only my pellicle, my instructions, the box the pellicle is packed in, but even the paper the poor little box is wrapped in, all come in for his displeasure. He goes on to say that from the positive way in which I speak in my paper of the certainty of the gelatine emulsion, he considered it his duty to try it. To whom, or to what this great duty is attributable he does not say, nor do I suppose it matters much; but I must say to him that when anyone undertakes to write publicly from a sense of duty of some kind, he ought, if he can, at least write accurately; not that I attribute a deliberate perversion of facts to "W. J. C. M."; all I say is that there should be more care used in "W. J. C. M.'s" letter, as it is likely to mislead.

"W. J. C. M." is particular to inform your readers that he followed out my instructions most carefully; but I will now undertake to show that he did nothing of the kind, and that the very departure from the instructions has caused the failure of which he complains. Will "W. J. C. M." or any one else point out in what part of my instructions he or they find that I advise drying by heat? If it cannot be found, what becomes of the truth of the assertion that the instructions have been carefully followed? I should advise anyone sufficiently interested in the matter to try the following, and report the result. Coat a plate, and let it partly dry, then finish drying the moistened part by heat; expose and develop as directed. The part dried spontaneously will adhere firmly to the glass, whilst that dried by heat will act exactly in the same way as described

\* The Photographer's Friend.



by "W. J. C. M.": it will burst up, and leave the plate thus proving that had the plates been thousands, instead of several, they would all have been failures.

I am afraid "W. J. C. M." is also affected with colour blindness, as he does not appear to distinguish the difference between yellow and white, for I can assure him not a single packet has been sent out with the scanty covering of white paper he so carefully describes: each and every packet that has been sent out has had a yellow covering. It is from not fully appreciating the excessive sensitiveness of the pellicle that so many fail to succeed. Some tell me they coated the plates by the light of a candle, others by a paraffin lamp, and then wonder how it is they get nothing but a thin image and fog. I only wonder they get an image of any kind, considering the pranks they play with the pellicle.

When I commenced, I did not intend writing so long a letter, and will now conclude by inviting any one really interested in the process to come and see it worked; and if "W. J. C. M." will favour me with a call, I have not the slightest doubt his next letter will be the very opposite of his last, and the numerous alterations and extra instructions which made him so heart-sick, he will find, are merely to simplify still more one of the most simple and rapid, as well as the cleanest, process out.—Yours truly,  
R. KENNETT.

#### NEW METHOD OF COMBINATION PRINTING.

SIR,—In reply to Mr. Bovey's very sensible remarks, I beg to say that he is quite right in his statement of my reasons for giving photographers a chance to find out my invention, as I should not like to sell it to any one if I did not think I was the inventor; and my reason for stating that I will give photographers my system of working if they point out the principle is, that no two photographers work exactly alike, therefore those who find it out must be the better off, on account of their having my system and their own, as I do not know what else I have to offer them for their ingenuity.

In regard to the system Mr. Bovey puts forward for obtaining combination prints, I have seen the same in the *News* some time back, of a gentleman stopping out the print on the sensitive paper, and then printing in the background. It was the interior of a room spoken of, so that I do not call that a new invention. In the time Mr. Bovey could print one in that way, I could print three or more, unless he is a very quick hand at stopping out. And in the plan Mr. Bovey puts forward, say a customer wanted a dozen cards, it would be rather awkward to have to sit down and stop out each print while doing your printing, with a few dozen pressure frames out, and he would find it rather difficult to stop out a young lady's flowing hair that intruded on the background, which my system can do, as my specimens will show. As I state, it is a quicker and better method than any other system, and I was fully aware of the system Mr. Bovey has put forward, having seen it in print.

I must keep my system till the time has expired, otherwise I shall not do justice to my photographic brethren. I own it is a challenge, but my reason for giving it is, that in future time another cannot say he had invented it before me.

I hope the hint taken by Mr. Bovey from my advertisement will open a new field of enterprise. I would be one to join in the fun.—Yours, &c.,  
W. TILLEY.

Stafford, July 20th.

#### ACCURACY IN FORMULA.

SIR,—In the notices to correspondents, on page 324 of the *News*, 3rd instant, T. W. Reynolds complains that he fails to obtain the rapidity "often described with a variety of dry processes." I can quite sympathize with him in this complaint, as the same experience is constantly my own lot.

I am far from insinuating that those gentlemen who kindly give their experiences to the world willingly withhold any essential information which might conduce to the successful working of their dry processes, but there is a want of definiteness, which no doubt constantly leads many workers into error. Take, for instance, Captain Abney's beer process. In the first place, the description of beer is not stated, and there is a vast difference in that manufacture. Secondly, he says he prefers to coat his plates with a 2½ per cent solution of albumen; and the first question that arises is, does he mean 2½ ounces of albumen to 100 of water, and if not, what is intended? Thirdly, after getting rid of the free silver by immersing the sensitized plate in distilled water, he says, "Then wash for a minute or two under the tap," but not one word is said as to the size of the plate so washed, and it stands to reason, that supposing Captain Abney uses 10 by 8 plates, and I use stereoscopic size, the amount of washing that my plate receives very greatly exceeds that which his plate receives; therefore it would be a great boon to amateurs, who have little time for experimenting, if some idea were given as to the size of plate requiring two minutes' washing; and the same remark applies to washing off the albumen coating. Again, a final wash of beer and pyro is given, no time being stated during which this solution is to remain on the plate. Such, Mr. Editor, are the principal defects in the description of Captain Abney's process, and I am sure he will only be too desirous of assisting those who have little leisure for entering into the minutiae above referred to. Now, sir, I am a very careful worker, but although I carry out Captain Abney's instructions as to bath, albumen, &c., and use distilled water for the first washing of the plates, I am perfectly unable to obtain the rapidity which that gentleman arrives at. I can vouch that the light I work by is quite of the right description, and that the materials I use are of the best. My lenses are also of the best kind, being Dallmeyer's rapid rectilinear; nevertheless, I require to give my dry plates, on an average, six times the exposure necessary for the wet process. How this is to be accounted for I cannot tell, but I am clearly not the only one who fails in the particular manner referred to by your correspondent, T. W. Reynolds. If yourself, or Captain Abney, will come to the rescue, I shall be extremely obliged.—Your obedient servant,

DRY PROCESS.

#### Proceedings of Societies.

##### EDINBURGH PHOTOGRAPHIC SOCIETY.

THE first out-door meeting of the season was held at Ravelston on Saturday, the 11th inst. The liberal proprietor, Mr. Murray Gartshore, kindly drove the party from Edinburgh to his estate, where they arrived about eleven o'clock. The day, unfortunately, was unfavourable for photographic work, in consequence of the prevalence of very high wind, although some very good negatives of the fountains and statuary were obtained, and Mr. Pringle secured several good groups of the members and their host. In consequence of the wind, some of the cameras remained unpacked, and their owners accompanied Mr. Gartshore on a tour of inspection through the grounds, with a view to another visit on a more favourable day. They then inspected the house, which is well worth a visit from all interested in literature and art, the collection of pictures being especially fine. The workshop and photographic laboratory occupied the rest of the afternoon, and the party were then entertained to dinner in right royal manner.

After dinner the members constituted themselves into an ordinary meeting, with Dr. John Nicol in the chair, and Mr. Barclay was admitted an ordinary member.

Mr. PRINGLE said he wished to make a few observations in connection with what he had said at last meeting about Weston's rotary burnisher. When those observations were made he had not had much experience of the burnisher; and the little he had was not favourable, as it scratched the surface and produced irregular markings. Now, however, he was glad to say that after a few weeks' trial they were thoroughly satisfied with the machine,



and, in fact, did not think they could get on without it. He found that the scratch in the burnisher was easily removed by a boue, and the surface produced was such that in some cases prints too poor to pass muster looked first-rate after burnishing.

Mr. TURNBULL said he had no doubt that the burnisher gave a fine surface, but he maintained that his ordinary press, with the plate heated, gave one quite as good; and, in proof of his statement, showed some cartes finished by both machines, and it was impossible to tell which was which.

A hearty vote of thanks was then given to Mr. Murray Gartshore for his handsome entertainment, and the meeting was adjourned, the members reaching Edinburgh about eight o'clock, much pleased with the excursion, notwithstanding the unphotographic nature of the weather.

## Talk in the Studio.

**ART COPYRIGHT.**—Mr. Henry Blackburn, writing to the *Athenæum* upon certain difficulties in connection with art copyright, says:—"Within the last few weeks two rival processes have been perfected, by which almost any illustration can be reproduced in 'photo-relief' without engraving, and without the consent, even, of the nefarious publisher! Electros or clichés, almost identical with those cast from a wood block, are now produced by photography from any copy of a book or newspaper. A clear understanding, therefore, of the laws of copyright in these matters is urgently needed, both as regards England and foreign countries; and, I need hardly add, better laws. What is most needed at the moment is some system by which artists, and, more especially, photographers, can, without continual trouble and watchfulness on their part, protect themselves from having their works engraved without permission. With this view, it is proposed, by a company composed of artists and others, to form a central registry in London, where lists of all copyright photographs and drawings available for engraving will be kept, and a written authority given to the publisher on a payment of a small fee. This plan has been already adopted by the Berlin Photographic Company, and English artists and photographers will do well to take the hint. Publishers will certainly be the gainers, for the present want of system leads to trouble and confusion. Communications and suggestions on this subject will be gladly received by 'The Illustration Company,' 210, Strand, or by Henry Blackburn, Garrick Club.

**MICRO-PHOTOGRAPHY.**—At a recent meeting of the Royal Microscopical Society, Mr. Slack called attention to a slide exhibited under one of the society's instruments as being a remarkable specimen of Herr Muller's technical skill in mounting. The slide has photographed upon it, in an extremely beautiful and perfect manner, eighty spaces, with the names of diatoms below each, and a diatom of corresponding species was mounted in every space. Mr. Slack said he had received specimens of silica solution in the milky condition described by Mr. Reed at the last meeting, but was himself unable to detect any particles suspended in it, though some had been detected by Dr. Anthony. Mr. Charles Stewart described and figured on the board the peculiar position of the touch corpuscles in the skin of the hand, and he also exhibited and described a section of an ascidian, and explained the method of preparation.

**THE COMET.**—Mr. Norman Lockyer says:—"Ten minutes' exposure of a photographic plate gave no impression of the comet, while two minutes gave results for the faintest of seven stars in the Great Bear."

## To Correspondents.

**LEOPARD.**—Without knowing the history of the print, or the circumstances to which it has been subjected, which might have caused the spots, it is impossible to speak with certainty as to their origin. They do not seem to be due to imperfect fixation, but are more suggestive of the sensitive paper having come into contact with some foreign substance, which has slightly modified its character.

**F. T. D.**—Your second letter arrived too late for answer last week, but it did not affect our answer to both kind of spots. The carbolic acid is quite safe, and will not produce any bad result.

**X. X.**—Equal parts of ether and alcohol form the proper mixture wherewith to dilute collodion which has grown too thick by evaporation; but it is most important that the two spirits should be pure. Sulphuric ether is very apt to change. Merely standing for a time exposed to light, especially if the bottle be not full, will cause a change in the ether, which will become acid. This is probably the case with the ether you have used, which, by its acidity, has caused a decomposition in the collodion, by which iodine has been liberated, turning the collodion red. The loss of sensitiveness and effect generally are similar to that produced by age in the collodion. It would be wise to procure, if possible, the ether and alcohol used for dilution from the maker of the collodion; and, failing that, it is a good plan simply to dilute with new collodion, which is generally thin.

**H. C. COWSWELL.**—The use of sulphocyanides of potassium and ammonium as fixing agents in place of hyposulphite of soda received considerable attention some years ago, but these agents were finally abandoned, with considerable reluctance, because of certain serious drawbacks which made them unsafe as fixing agents. Experimental prints, produced with great care, might easily be obtained, possessing permanency; but prints fixed with ordinary care in a sulphocyanide solution would almost certainly darken afterwards when exposed to light. If you wish to make the trial, use a bath consisting of five ounces of sulphocyanide of ammonium in a pint of water, and after ten minutes' immersion remove the prints to another similar bath containing five ounces in a quart of water for a few minutes; then wash. If the first bath have three or four grains of chloride of gold added it will serve as toning and fixing bath in one.

**JOHN STONE.**—The sole use of ground glass with transparencies is to secure a soft white diffused light in examining them. If you attempt to examine a transparency without a piece of ground glass, or some equivalent means of diffusing and softening the light, you will lose much of the detail, and the lights, being quite transparent, will be disturbed by permitting objects to be seen through. In printing transparencies on dry plates, you of course bring the sensitive film into contact with the negative.

**M. S.**—We do not know, of course, what project you have of "checking" the unfair competition to which you refer, and could scarcely offer an opinion upon its legality if we did know. The assumption of a big name to which you refer is foolish enough, but we do not know of any plan of preventing such things. Our advice would be to leave the matter alone, and take no notice.

**D. R. F.**—Two causes may probably have been in operation in causing your films to dissolve when varnishing. It is possible your varnish may have been made with very strong alcohol or methylated spirit, and so possess considerable solvent power; and it is probable that your collodion has been made with pyroxiline which is soluble in strong alcohol; or, possibly, the pyroxiline has acquired that quality by some slight decomposition since the collodion was made. In any case, a coating of dilute albumen or gelatine applied to the negative film whilst wet will prevent any risk of the collodion dissolving whilst subsequently varnishing, or, if you apply your spirit varnish quite cold, and hold it before a brisk fire when the varnish is nearly dry; this will generally prevent the film dissolving, and also run no risk of chilling the varnish.

**TRY-AGAIN.**—As a rule, it is difficult to reduce an over-printed impression with any advantage. A solution of cyanide of potassium has sometimes been tried with advantage. After toning, fixing, and partially washing, the over-printed proof is placed in a solution of cyanide of potassium five grains, chloride of gold one grain, water ten ounces. When the excessive depth is removed, the prints are removed and the washing completed.

**NEO.**—It is quite optional as to whether you print any statement on a photograph or its mount, stating that it is registered. You may make the announcement, but it is not necessary to do so. Your copyright continues as long as you live, and for a term of years afterwards.

**C. C.**—If your sensitive plate and ground glass accurately coincide, and still the focus in the negative is behind the point for which you focussed, it is clear that the visual and chemical foci of the lens do not coincide. In that case, your only remedy is to make an allowance for the distance every time. 2. You should take care to test with a fine ground glass to make certain. If there be a serious difference between ground glass and dark slide it may be necessary to get a camera maker to rectify it; possibly you can make a slight adjustment yourself. 3. A stop should be a circle cut with moderate care.

Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED

Mr. W. G. LEWIS, Poole,  
Two Photographs of the Gentleman Organ Grinder.  
J. WILKINSON and Co., Colne,  
Two Photographs of Preachers and Delegates of Free Gospel Churches.



## The Photographic News, July 31, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### PHOTOGRAPHS ON TOMBSTONES—PICTURES BY THE WAY— PHOTOGRAPHY UNDER DIFFICULTIES.

*Photographs on Tombstones.*—In November of last year we made allusion in this column to the custom gaining ground on the Continent of placing photographic portraits of deceased persons upon their gravestones, and we pointed out that if the matter became general, then this would be, before all others, a direction in which enamel photographs might be employed with great advantage. Recently we have been informed that in England—at Shrewsbury, to wit—the practice of putting up *in memoriam* photographs in the churchyard is also rife, and we may anticipate, therefore, the possibility of the custom becoming more widespread. At the Père-la-Chaise and Montmartre cemeteries, in Paris, the neat iron crosses which there take the place of stone ornaments are sometimes to be found fitted with photographic pictures; but as these are for the most part paper productions framed with glass, they are ill-fitted to withstand the effects of the weather. Moreover, if any accident happens to the glass, or the framing is carelessly done, wind and water soon make their way to the perishable portrait, and destroy it. The only satisfactory solution to the problem will, therefore, be the employment of enamel pictures, and photographers who occupy themselves with the preparation of these beautiful productions will doubtless soon have increasing demands for such pictures made upon them. The placing of portraits of deceased persons in cemeteries and churchyards is by no means of recent date, for we could point out many a retired spot among the Alpine villages where the habit has obtained for many generations past; at any rate, the productions of the native artist upon the upright wooden boards scattered about the "Godsacre," reminding one of the ill-executed sign-boards one sees at English roadside inns. Indeed, the village painters, so far as our experience goes, never got beyond the depiction of something horrible, the weird faces around looking more pale and ghastly the older and more weather-beaten they became, the effect upon the visitor being such, in some of the quiet churchyards, as to cause him to beat a hasty retreat from the enclosure. It will be an important improvement, therefore, when little black-and-white photographs, no matter how badly executed, come to take the place of those horrible daubs and uncanny representations.

*Pictures by the Way.*—There is one point which amateur photographers will do well to bear in mind when strolling through a country with the camera. It is this. No matter what landscape or view is to be taken, it is always well to secure in it a habitation or building of some kind that shall be characteristic of the district. Indeed, it will be found that pictures taken of villages, cottages, huts, &c., will always pay better than mere views and landscapes, waterfalls, lakes, &c. There are exceptions, of course, but there is a strange similarity between the natural beauties of one country and another. If you take a picture of some gigantic Swiss waterfall that comes tumbling down two or three hundred feet, it is necessary to retire to some distance to get the whole of the effect upon your plate, and the chances are that you do not secure so good and grand an effect as that of a much more modest cascade, taken at close quarters. Proportion has a great deal to do with the matter. Hills a couple of thousand feet high appear to the eye from certain points of view quite as lofty as those of seven or eight in other places. Thus Cader Idris, or Snowden, from the fact that they are the monarchs of their district, and are surrounded by other mountains and hills in proportion, look sometimes quite as important, in their way, as the Rigi or Pilatus on the lake of Lucerne, because there are other peaks near

at hand which are higher again than these. Characteristic scenes from nature—such as the crystalline glaciers and snow cornices of Switzerland, the soft lake scenery of Italy, the wild crags of the Tyrol, and the gigantic mountain walls that border the Norwegian Fjords—are obviously all worthy of depiction, but, nevertheless, representations of them are much enhanced by the presence of a rustic hut or dwelling in the sketch. Amateurs will find that the more pleasing reminiscences are always those that show something of the life and customs of a country, and do not merely portray its natural beauties. A quaint chalet, an ancient German burg, a village street, or an old-fashioned bridge afford pictures which will be more highly prized hereafter than any secured of mere mountains or valleys. One word more on the question of snow scenery: we have ascended Ben Nevis in June, and seen snow cornices as soft and beautiful as those of Switzerland, and we think that a photographer making the ascent early in that month, or in May, might be able to pick out many little bits which would have all the characteristics of Alpine photographs.

*Photography under Difficulties.*—If some ingenious inventor would improve upon the *Pistolgraph*, and give us a *Riflegraph*, or something of the kind, there would be a use for it. The other day a photograph of a military balloon was required to be taken, to the car of which a steering apparatus had been attached, which was to do wonders in making the bulky machine sail in the teeth of the wind. A picture was desired showing the balloon floating in the air, and under the influence of this apparatus, when at some distance from the earth. Under these circumstances, the best instrument for taking the picture would have been one that could have been levelled at the balloon when flying, the photographer taking aim (by looking through a cylinder, or something of the kind), pulling a trigger to expose instantaneously as soon as he could cover the object. As it was, unfortunately, it was so difficult to judge beforehand of the course of the balloon, and the influence of the steering invention (which turned out to be *nil*), that only an indifferent result could be secured with the ordinary camera and apparatus.

### PHOTOGRAPHIC IRRADIATION OR "BLURRING."

THE following further correspondence on this subject appears in *Nature*:—

"In answer to Mr. Ranyard (*Nature*, vol. x. page 206), I have to state that the opaque bar in my experiments was placed as close to the collodion as possible without touching it, not farther than .01 inch from it, and that there were no photographic traces of diffraction bands.

"Allow me now to suggest a possible explanation of the different results given by Mr. Ranyard's and my own experiments. One important difference in the arrangement of the two experiments was, that in the one case the opaque bar was in contact with the collodion, and in the other case it was placed at a very short distance from it. In the experiments with the bar in contact with the collodion, the nitrate of silver solution on the surface of the plate would not form a true plane, but would be curved upwards at the edge of the bar; and further, this curve would not be regular, but would have irregularities corresponding to every irregularity in the edge of the bar. This irregular curved fluid surface would cause irregular refraction of the light falling at the edge of the bar, and would give rise to bright and dark parts on the sensitive surface; the bright parts would be extended by molecular irradiation underneath the opaque bar, and would give rise to the irregular brushlike projections mentioned by Mr. Ranyard, instead of the uniform extension obtained when the bar is kept a short distance from the collodion. It is also possible that the irregular curved fluid surface may at certain points, where the bar was not in actual contact with the collodion, have bent the rays of light underneath the bar, and given rise to the irregular extension of the image.

JOHN ATEN.

"Darroch, Falkirk, July 18."



"I must confess myself at issue with Mr. Stillman as to the result of his experiment with the strip of blackened wood laid upon the collodion film. I have tried a similar experiment, and find the images of bright objects sharply cut off. Even with a film of four thicknesses of collodion and an exposure of ten minutes, I cannot detect the smallest encroachment. The minute brushes mentioned by me in my last week's letter only occasionally occur, and appear to be due to a circulation in the liquid film beneath the opaque object, probably caused by some chemical impurity, for I notice that the brushes only occur when the film beneath the opaque object is soiled.

"It cannot be argued that because there is a difference in the amount of irradiation in two pictures taken by different processes (instruments, exposures, and other conditions being similar), that therefore the spreading action must take place within the film, for the plates prepared by the two processes may not be equally sensitive, and the pictures may really correspond to what, with the same process, would be different amounts of exposure. Or, again, the relative rates at which faint and intense light imprint themselves in the two processes may differ. Want of sensitiveness to the action of faint light is, I imagine, the reason why irradiation is apparently decreased by the use of the red collodion.

"A. COWPER RANYARD."

#### ART PRINCIPLES FOR PHOTOGRAPHERS.\*

68. It is gratifying that the days of white pictures have passed, and it has been demonstrated that extensive shades are admissible in a portrait, as well as in a landscape where rocks and hills cast their grim shadows and give grandeur to the scene; that a face may receive the same treatment at the hands of an artist that nature accords to her works everywhere, and be more truthful, more pleasing, more life-like. The shadows and middle tints give support and brilliancy to the lights; there is no glare; the eye does not tire, but wanders from point to point, continually attracted by the sense of completeness and repose that characterizes the whole. An important consideration in a bust portrait is to give it a well shaded background, the deepest parts against the lights in the model; this is indispensable to the brilliancy and beauty of the face.

69. In the more elaborate compositions of figures and accessories, shadows may be made effective by a judicious arrangement of the several parts, especially the draperies, the whole being based on some part in which the depth of shadow culminates, and from which the eye is led to the principal subject of the composition. In reference to this mass of shadow, whether in a bust or full-length portrait, it need hardly be observed that, even where most vigorous, it should not be a mere blot which obliterates wherever it is extended. The occasions are very few where either the form or the proper colour of objects can be thus totally lost, because objects in the strongest shade are only deprived of direct light; they are more or less illuminated by the surrounding atmosphere, and the reflected lights from other objects.

70. This is a point that requires great care on the part of the photographer: to so arrange his light that the form and detail in the deepest shadows will be given. In many of the so-called Rembrandt or shadow pictures this is a grievous defect, and mars the beauty of many an otherwise beautiful production.

71. The artist with brush and colour may give the form in shadow at will, and study the effect of every touch he makes; but the artist photographic has not the same control over his work after the impression is once made, except by retouching the negative; and the basest use of that indispensable adjunct of the art is in supplying what is actually lost or wanting. In a perfect negative impression there should be nothing lost—no blanks of either light or shadow. As all means are legitimate in producing a work of art, so long as the method is not apparent in the result, the photographer should not

hesitate to avail himself of any device that will assist him in representing the truth of nature.

72. When in producing the shadow effects the hair is dark and gives too heavy a mass of shadow, it may be lighted with a slight touch of powder so as to give all the detail, and yet not appear in the finished picture that any artifice whatever resorted to. This is much better too than using reflected light in the shadow, so long as the face does not need it. One of the worst effects that can be produced is the wasting of a natural shadow by throwing in a false light for the purpose of illuminating some other part. It is much better to employ some of the more happy artifices, such as a little paint or powder, a little different arrangement of the folds of a drapery, which may be made to break up too dense a mass of shade, or the contracting or extending of accessories so that reflexes may be obtained wherever they will produce the best effect.

73. In no direction, probably, have photographers erred so much as in the use of accessories; and yet there is scarcely one pictorial subject that does not require the expression and character obtained by the introduction of some accessory.

74. Nothing has so bad an effect as a picture crowded with accessories that have no connection with the principal subject. Many good artists run to excess in this direction, and all rules of art and good taste have been so outraged by the great mass that have used accessories indiscriminately, without regard to fitness or effect, that the demand for pictures of this style has almost entirely ceased, and the bust picture, with but little more than the head and shoulders, has become most in vogue.

75. It is not to be understood, however, that accessories consist only in the objects that may be placed in the picture independent of the subject, such as chairs, tables, columns, &c.; but the drapery that may compose the costume is an important accessory, requiring taste and skill in its arrangement.

76. It is universally allowed that Raffaele excelled all other painters in a graceful arrangement of drapery, and a natural disposition of the folds. By studying the principles of the ancients he learned to consider the figure as the principal part, and that drapery should be regarded as an accessory; that it is intended to cover, and not to conceal; that it is employed not from caprice, but from necessity; consequently, the dress should not be so narrow as to constrain the members, nor so ample as to conceal them, but suitably adapted to the size and attitude of the figures represented.

77. The photographic artist has his drapery under his control quite as much as the painter, and there is nothing in connection with composition that requires more careful study and a closer observance of nature than the disposition of draperies. Even in the simple bust picture, where there is so little to display, its effect is wonderful in giving a proper balance to the lines, and contributing to the unity of the whole. But how much more important is it in a full length figure, where its flowing lines and graceful folds may be made to not only give support and symmetry to the subject, but breadth and force to the whole, by a proper distribution of light and shade.

78. Variety in the use of accessories is a necessity that stimulates study and invention. Nature never repeats herself even in two sides of a leaf; such precision belongs only to machine work; and in studying nature we learn that variety is no less necessary to a pleasing composition than unity. It is the want of this that has compelled so limited a use of accessories at the present time. The incongruity of photographing lawyers, statesmen, artists, farmers, preachers, ladies, and babies, all with the same surroundings, became too monotonous to be tolerated, and those who could not remedy the evil and retain the style, have done well to substitute a style that was quite sure to give the variety that nature furnishes in the ever varying phases of human forms and features.



79. A judicious use of accessories requires that they should correspond with the character of the subject. If it is light and gay, a much greater variety of objects may be admitted than if it is grave and majestic. By multiplying objects, a greater variety is obtained in line and light and shade, which contributes to gaiety. A variety of objects is inconsistent with the simplicity so essential to the grand style. The best works of art—those that are the most pleasing, the most enduring, and produce the most forcible impression—are always characterized by simplicity. In pictures of this character, variety must be considered with reference to that undivided attention which a great subject demands.

80. In the use of accessories proportion is an important consideration. It is requisite in everything intended to please the eye. In works of art it refers first to size; next to the degree of light and shade; and again, to the force of expression required in the character of the scene represented. Any work is in good proportion if its details are neither too large nor too small when viewed in relation to the whole or to each other. For example: if a man be surrounded with furniture the proper size for a child, he would be made to look like a giant; while on the other hand, immense secretares and mammoth chairs dwarf the subject, giving it an air of weakness and inferiority.

81. Harmony is an important element in a composition. There must be harmony of line, harmony of grouping, harmony of light and shade, harmony of expression. Each part must be so adapted as to correspond with the rest. The attitude must be in keeping with the expression; and the accessories must be true, both to the character and the age represented. A harmonious whole is always more or less pleasing in itself, independent of subject or style.

82. Lastly, breadth is essential to harmony. According to Allston, "by breadth is meant such a massing of the quantities, whether by colour, light, or shadow, as shall enable the eye to pass without obstruction, and by easy transitions, from one part to another, so that it shall appear to take in the whole at a glance." To this unity is essential. When the objects introduced in a composition are multiplied, scattered, and divided, the eye, in searching for the principal object of interest, becomes wearied and perplexed, and the picture is then said to want repose. Unity, however, is distinct from harmony, and requires one point of view, one focus of light, one prominent character or group, one leading idea. There may be unity of parts when harmony in the whole is entirely wanting. Accessories, then, should only be used as such, and correspond with the subject, that the eye will be led involuntarily to the principal figure, while all else remains subordinate and dependent.

## ON THE ACTION OF PIGMENTS UPON SENSITIVE SILVER SALTS.

BY PROF. H. VOGEL.\*

IN April last we referred to some experiments made by Lea with bromide of silver. Lea impregnated some bromide of silver films with colouring matter, and exposed them to light under coloured glasses. He thought to obtain in this way results similar to those I received with the solar spectrum. That this was impossible I have already said in the April number of this journal. Pigments and the colours of the spectrum are widely different things, and only rarely is the action the same. In the spectrum, red and yellow act upon a collodion film like black, and blue like white. This agrees in many instances, but by no means for all. One of the best known blues—the indigo of the Prussian infantry—is not rendered white, but is represented as dark in a photograph as in nature; while one of the best known reds—madder—does not become black, but almost white, in a picture. Aniline red is

rendered like white paper; and Naples yellow not black, but grey, when depicted by means of the camera. A mere glance at the colour table in my manual, which shows the results colours give in photography, suffices to prove that the action of pigments cannot be summed up by the rule that blue always reproduces a light tint, and red and yellow dark ones. And if this rule does not hold good with coloured bodies, it is much less correct in the case of transparent tints.

All pigments are impure; that is, they consist of several colours of which our eye perceives but one. It is only the spectroscopic that can give a decision upon the mixture of colours. If an indigo or Prussian blue surface is looked at through a spectroscopic, the colours are seen separately, and the eye is able to appreciate them. It is then seen that in indigo or Prussian blue there is an appreciable quantity of red, and in madder a great deal of blue and violet. If Lea is right in saying that a mixed colour has the action of the dominating colour that we see with our eyes, then Prussian blue would give a white result, as is not the case; and madder, Naples yellow, ochre, &c., would yield dark impressions, as we know they do not.

Those who experiment with impure colours are in the same position as a chemist or photographer who employs impure chemicals.

What would Mr. Lea say if I were to test his dry bromide plates, and use for the purpose impure collodion, as also impure bromide salts, acids, and silver salts, and badly cleaned plates? I believe he would scarcely think it worth his while to criticise bad results obtained under these circumstances. Is it not pretty well the same, then, when an experimenter works with impure colours, and hopes to secure the same results as those given by spectrum colours? And when one comes to hear how Mr. Lea has conducted his experiment, the matter becomes stronger still.

I observed that bromide of silver mixed with aniline red was acted upon vigorously by the yellow rays of the spectrum—that is, those rays were energetically absorbed by aniline red. If, therefore, a red tinted bromide of silver film is covered with a glass coated with aniline red varnish, it is clear that the aniline red varnish will absorb the yellow rays. The penetrating light does not, then, any longer contain the yellow rays, which, according to my observation, act upon bromide of silver. Obviously, therefore, this action cannot take place. If it does, it is due to blue rays that have penetrated.

Now, says Mr. Lea, exception cannot be taken to these experiments, because in many cases the same pigment was used for colouring the bromide film as was employed for tinting the glass over it. This statement is sufficient to condemn his experiments, because obviously he has cut off those coloured rays which, according to my experiments, are just those that act upon the bromide of silver.

The conclusion is, that phenomena such as I have observed can only be obtained with pure spectrum colours, and not with impure pigments. Mr. Lea avows one thing more. He remarks that solacine, according to his experiments, greatly augments the sensitiveness of bromide of silver for the yellow and red rays, although it is absolutely colourless, and therefore absorbs no colour at all.

Mr. Lea appears to have overlooked the fact that there are colourless bodies which show vigorous lines of absorption in the spectroscopic, such as atmospheric air, vapour, the salts Didym and Erbium. If he is not aware of such absorption power existing in solacine, it does not follow that it is not there.

Besides, my observation is not the only one of the kind. Nitrate of silver is a colourless body; but, according to my experiments, it has especial sensitiveness for violet and blue rays (*Mittheilungen*, 1874, p. 233); and colourless morphia increases, in my experience, the sensitiveness for green, yellow, and red—a result which, to those who know of the absorption of colour by colourless bodies, is nothing extraordinary.

\* *Photographische Mittheilungen*.



The spectrum colours differ materially from ordinary pigments, not only in the matter of purity, but as regards brightness, which has also much influence upon the result.

The yellow of the spectrum is, according to Fraunhofer's and Vierodt's experiments, a hundred times brighter than the indigo of the spectrum that acts most energetically, speaking photographically. Such intense brightness is possessed by no yellow pigment.

Compare, for instance, the chrome yellow in my colour table with the ultramarine, and one would say that the yellow is at least double as bright as the blue. If, then, I observe an action with a spectrum yellow fifty times as bright, equal to that of the spectrum blue, it follows, as a matter of course, that the matt chrome yellow, compared to the blue, cannot produce a similar action. We must, therefore, enhance the sensitiveness of bromide of silver for yellow fifty times before we get an action from chrome yellow. My experiments lead me to hope that this goal may be reached.

The above may be taken as a criticism on the experiments with coloured glass undertaken by Lea, Spiller, &c.

More recently Dr. Monckhoven has published a series of experiments with the spectrum itself, and this gentleman has been unable to secure the results attained by me. He remarks that if my experiments prove right, they will influence the focus points of photographic lenses, and he therefore repeated my experiments with the best constructed apparatus. He employed a spectroscope of flint prisms and condenser, &c., with which he obtained a spectrum of forty centimetres.

I envy my worthy colleague such an apparatus, which, unfortunately, was not at my disposal, for I could only obtain for my experiments one throwing a spectrum of six centimetres. I only wish the precision adopted by my colleague in regard to his apparatus had been observed also in his communication. In reference to this I must remark that Dr. Monckhoven quoted my results with much lack of precision.

I was not a little surprised to read in the *British Journal* of 19th June, page 292, that, according to Dr. Vogel, a bromide of silver plate is only sensitive to rays more refrangible than green. That is rather wide of my remark (*Mittheilungen*, 1874, page 234), which is expressly to the effect that dry bromide of silver is sensitive to the orange rays.

It is, further, an incorrect repetition of my statement when Dr. Monckhoven says that I affirm "that by adding to the bromide of silver any colour which absorbs a certain part of the spectrum, the maximum of sensitiveness in the bromide will be found in this portion." Of this there is nothing in my communication; I only said that coralline plates showed themselves almost as sensitive to yellow rays as to indigo. Only in the case of chloride of silver does the maximum effect reach to the yellow when naphthaline red is used. I am, moreover, much surprised that Dr. Monckhoven reports that I employed only one prism of flint glass, when I stated that I used a spectroscope *à vision directe*. As erroneous is the description of his own experiments.

He exposed a wet collodion plate to the spectrum, and found it sensitive, at the most, as far as line 1,450 of Kirchhoff; or, in other words, to green. It does not transpire, however, whether the wet plate contained bromide of silver or only iodide of silver. I took it to be of the former character. Then he says further on: "Bromide of silver in wet plates is not more sensitive to green than iodide of silver." He then says that he has tried fuchsine, coralline, &c., and repeated his experiments in every form, and yet obtained no traces of sensitiveness to yellow and red. Finally he adds that, if he is rightly informed, similar (negative) results have been obtained in Bunsen's laboratory at Heidelberg, that an illustrious French physicist (name?) has also been unable to secure results, and that

from the Ecole Normale, the Conservatoire des Arts et Metiers in Paris, Mr. Norman Lockyer, Mr. Spiller, Col. Stuart Wortley, and Mr. Lea, the same negative results are reported. There is, therefore, a perfect array of opponents in the field, whose names alone suffice, according to the *British Journal*, to give my results the *coup de grace*, and banish them altogether.

Of Lea and Spiller's assertions I have already spoken. Experiments made without the spectrum can never be taken to contradict those undertaken with it, any more than experiments without collodion can be employed in combating collodion investigations.

As to the other gentlemen mentioned by Dr. Monckhoven, I have read nothing of their statements, and cannot, therefore, say anything. Fortunately, however, Dr. Monckhoven himself furnishes me with a means to contradict all the assertions. He anticipates that my results with red light may be produced by the action of diffused light, which comes through the prism, for he says that he is quite convinced that Dr. Vogel's plates show neither line D, nor line C, nor lines B and A of the solar spectrum. I have however plainly photographed lines E, D, C, B, and A.

"The publication of a photographic spectrum in one of the journals is the practical plan for Dr. Vogel to prove that he has discovered a new process for the photographing of the yellow and red portions of the spectrum, and would be a direct proof that he has really obtained the results in question," says Dr. Monckhoven. I am very grateful to my colleague for this hint, and shall take the opportunity of making public several photographs of the spectrum which have been submitted to the Academy of Sciences.

In the meantime I may say a word upon Dr. Monckhoven's non-success. He employed a slit of only  $\frac{1}{10}$  m.m., while I used one of a quarter of a millimetre. For this reason his spectroscope admitted but seven and a-half times less light than mine. His spectrum stretched to forty centimetres, seven times longer than mine, and, therefore, the brightness of his picture was 7 by  $7\frac{1}{2}$ , or fifty times weaker than mine. I required exposures from three to fifteen minutes. If Dr. Monckhoven desires to obtain the same result with his weak spectrum, one hundred and fifty minutes' exposure would be necessary. Instead of this he gave two minutes. That explains a good deal. The non-success with coloured plates has still another cause—he has most likely coloured them too highly. At the first glance, one might think that much colour would be beneficial. My first experiments proved to me the contrary with naphthaline red and aldehyd green, and the explanation of this is easy.

Every particle of bromide of silver is surrounded by an envelope of coloured collodion. If the colouring be too dense, the light is too much weakened by absorption before it gets to the bromide of silver, and is not then in a position to act vigorously enough. I prepared four plates, Nos. 1, 2, 3, and 4, of which each was half as strongly tinted as the previous one; the one least tinted showed the highest sensitiveness for yellow rays, the darkest showed no action at all. More anon.

#### GLUE AND ITS USES.

WE condense from an article in the *Boston Cabinet Maker*, originally derived from *Tomlinson's Dictionary*, some hints upon glue and its various uses which may prove useful to our readers.

The better sorts of glue are transparent, especially the thin cakes of the Salisbury glue, which are of a clear amber colour. The best glue swells without melting when immersed in cold water, and renews its former size on drying. The method of softening it for use is to break it into small pieces, soak twenty-four hours in cold water, and then melt



slowly over a fire with frequent stirring. When prepared in this way it cools down into a stiff jelly, which requires only a little warming to fit it for use. Glue must not be used in a freezing temperature.

A strong compound of glue is made by infusing common glue in small pieces with isinglass in spirits of wine, just sufficient to cover the mixture. Heat is then cautiously applied, and when melted, powdered chalk is added, making the whole of an opaque white. A strong glue, which will resist water, is also obtained by adding half a pound of common isinglass to two quarts of skimmed milk, and evaporating the mixture to a proper consistency. If gelatine, which has been swelled in cold water, be immersed in linseed-oil and heated, it dissolves and forms a glue of remarkable tenacity, which, when once dry, perfectly resists damp. Ordinary glue may thus be dissolved, and a small quantity of red lead, in powder, added.

If appears from the observations of M. Schattenmann, a glue-maker, that fresh glue dries much more readily than glue that has been once or twice melted; and that dry glue steeped in cold water absorbs different quantities of water according to the quality of the glue; and the proportion of water so absorbed may be used as test of the quality of the glue.

It appears that fresh glue contains water of composition, or water more intimately united with the glue than water mixed with it in the process of melting, which admits of being readily disengaged by evaporation. The combined water of dry glue disappears in the course of successive meltings and solidifications to which glue is subjected. Glue in thin plates is usually of better quality than thick ones, even when made with the same kind of gelatine, because the thin plates admit of a more complete drying than the thick. In applying M. Schattenmann's test, dry glue is immersed for twenty-four hours in water at the temperature of about 60° Fahr. A jelly will thus be formed, the qualities of which will fairly represent those of the glue. For example: the finest ordinary glue, or that made from white bones, absorbs twelve times its weight of water in twenty-four hours, so that a plate weighing three grammes produces thirty-nine of fine elastic jelly. Glue from dark bones absorbs nine times its weight of water, and produces not quite so fine a jelly. The ordinary glue of Alsace or of Germany, made from animal refuse, absorbs five times its weight of water producing a soft brown jelly, without elasticity and consistence, and falling to pieces when handled. The common glue of Boulogne absorbs three and a half times its weight of water.

Well-dried glue is much less hygrometric than badly made glues, or those made of inferior materials. The latter are liable to putrefaction. The water of composition seems to be injurious to the strength of glue, which increases in proportion to its dryness.

"Glue or gelatine has lately been applied, with great success, to the formation of moulds for castings. The difficulties attending the use of sands, clay, plaster of Paris, wax, &c., in forming moulds for casting, are very great where the objects to be repeated are complicated in form. About the beginning of the present century the Germans introduced the use of glue for making moulds, which was not employed in this country until about the year 1826, when Mr. Douglas Fox used it to take casts from his anatomical preparations, calcareous concretions, vegetable preparations, &c., and in order to give greater elasticity to the moulds so obtained, and to keep them in a fit state for use during a long period, he mixed treacle with the glue; this, however, was found to discolour the surface of all white bodies, and its application being limited by this objection, the plan was abandoned.

About the year 1844 attention was again called to this subject by the production in France of a series of casts in imitation of ivory; and about 1846 the Society of Arts of London offered a prize which was awarded to Mr. Franchi for his specimens of casting in plaster composition

in imitation of ivory. At the time the award was made the nature of the material used by him was not known; but it has since proved to be pure gelatine, and owing to the skilful use of his material some exquisite electrotype casts deposited in the Geological Museum were obtained from objects greatly under cost. Mr. Franchi has since found that he can obtain from a gelatine mould a cast in gelatine in relief without losing any of the sharpness of the original. This has enabled him to apply objects modelled on flat surfaces to cylindrical bodies, thus saving the labour and expense of modelling. One great advantage of gelatine moulds is, that casts without seams can be taken from them.

*Diamond Cement*, or white fish-glue, is made of isinglass dissolved in dilute spirits of wine or common gin. The two are mixed in a bottle loosely corked, and gently simmered in a vessel containing boiling water; in about an hour the isinglass will be dissolved, and ready for use. When cold, it should be an opaque, milk-white hard jelly; it is remelted by immersion in warm water, but the cork should be at the same time loosened. After a time a little spirit should be added to replace that lost by evaporation.

#### APPLICATION OF DR. VOGEL'S RECENT DISCOVERY IN PHOTOGRAPHY.

A CORRESPONDENT of the *Scientific American* writes as follows:—"The interest which you and some of your readers take in photography may render the following worthy of note. Dr. Vogel has discovered that a sensitive-eollodion film of iodide of silver, when covered with some colouring matter which obstructs certain rays of light, and does not interfere with other rays, becomes sensitive to those other rays; that is, those rays which are obstructed act photographically upon that film just in proportion as they are obstructed. If the yellow rays are stopped, then the film becomes sensitive to yellow light, and yellow objects, which have heretofore been considered non-actinic, can thus be photographed as easily as blue objects have been. If this be so, then it is one of the most important discoveries that have been made in photography since the discovery of that art. It will enable us to depict objects of all colours, the inability to do which has been a great stumbling block in the way of photography. I need not mention the numerous ways in which it may be applied: suffice it to say that heretofore only one of the four primary colours has been considered to be actinic—that is, the blue. As to the theory of the above, you are well aware that there are two theories regarding the action of light on the sensitive film, one called the chemical, the other the physical theory. In the first it is claimed that the reduction of the silver is done while the light is acting upon the film. In the second it is claimed that a tremulous or vibratory motion is communicated to the film by the vibrations of light; and that when the developing solution is applied, the reduction takes place. In either case it is the vibration of light that does the work. The reason why iodide of silver is more sensitive to the blue ray is, it is thought, that the wave length of that ray coincides more nearly with the size of the particles of the iodide of silver, thereby disturbing or tearing them apart more. If a sensitized iodide of silver film be held before white light, it will be seen that the only colour apparent is the orange; and that blue objects appear black when viewed through it, showing that the blue rays are all obstructed. That film is therefore sensitive to blue light. Again, suppose we give that film a blue colour, then the orange or yellow rays are stopped. As action and reaction are equal, the amount of resistance exerted by the film is equal to the amount of light stopped; and the ray which is then most obstructed has the greatest action on the film. Taking this view of the matter, it seems to me quite reasonable that any ray may be made actinic."



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## THE USE OF PORTABLE SCREENS IN PORTRAITURE.

THE use of hand-screens for the purpose of modifying the light and shade in portraiture is much less common than it deserves to be; probably not one professional photographer in a thousand in this country availing himself of its advantages. In the old Daguerreotype days such aids were more commonly used. The late Mr. Claudet was in the habit of using with valuable effect a small black screen at the end of a long rod, for modifying the effects of light upon the model. Much of the effective distribution of shadow in Mrs. Cameron's pictures is said to be due to similar agency, an umbrella or parasol, as it is alleged, occasionally doing duty as a screen. In America, the hand-screen is a recognized adjunct to the portrait studio, more than one ingenious contrivance for the purpose having, we believe, been patented.

The general purpose of the hand-screen is to intercept light and increase shadow, but it may be used to reflect light and decrease shadow. In its simplest form it consists of a screen varying from twelve to twenty-four inches square, or, say, an oval eighteen inches by twelve inches, covered with black velvet, and attached to a handle, say, six feet long. Its use permits the sitter to be placed in the full blaze of a strong light, the incidence of which is modified by the use of the hand-screen skilfully and quietly used by the artist. If the light fall too strongly on the top of a head of glossy hair, making it appear grey; if it fall too strongly on a grey head, making it appear white, the intervention of the screen during part of the sitting at once modifies the result. If a deeper shadow is required on one side of the face or on some portion of the drapery, the screen is brought into requisition, and the shadow secured. If some portion of a light dress is required for pictorial purposes to be kept low in tone; if a vast expanse of white shirt-front threaten to become a mass of chalky white, swallowing up all the other lights in the picture; if some portion of the accessories be too light and obtrusive; if a shadow be desired in the background, the skilful use of the screen will give effect to the aim of the artist using it. Of course it must be used with skill, and a little experience will be necessary to master all its capabilities. It must never come so near the object as to give abrupt effects; it must never be held quite still; care must be used to prevent the shadow extending beyond the desired area. Probably screens of varied sizes would be found useful in securing the best effects. A screen with one white side would undoubtedly be found useful in modifying too deep a shadow on one side of the face, or elsewhere, by throwing a reflected light thereon.

It need hardly be said that one of the most important

points in the use of the screen, demanding skill and judgment, will be to avoid such action as may distract the attention of the sitter. If it be clumsily and injudiciously obtruded, so as to disturb the sitter and cause movement, it would be more mischievous than useful. But this is not necessary: by gentle and quiet action at a sufficient distance from the sitter, a screen may be used so as to scarcely attract attention at all. Many skilled English photographers object to the screens on the score of risk, and reject such aids because they feel confidence in their own ability to secure such light and shade as they desire without the risk of disturbance to the sitter which they conceive the screen involves. In the most skilled hands it is difficult, however, in some studios, without much and constant alteration of blinds and curtains, to get good lighting, and in such cases the screen would be found of great value. In the production of "Rembrandts" the screen is especially useful, and it is in this class of work it is, we believe, largely used in the United States. We recently had occasion, in speaking of a series of American photographs, to especially mention a point in which they excelled, and in which too many English photographers were wanting. In almost every instance the folds and minute markings of the shirt fronts in the portraits of gentlemen were perfectly made in the American photographs, the linen generally being kept considerably in shadow, so as to avoid the shirt being the principal light in the picture; whilst in many English portraits a mass of chalky white linen, with scarcely an indication of fold or texture, rivets the eye before it sees the face. In the old Daguerreotype time to which we have referred, a piece of black cloth was occasionally arranged over the expanse of white linen, and hastily snatched away by a string attached when about half of the time of exposure had elapsed, the aim being to avoid a burnt-out, solarized mass of bluish-white appearing in the picture. This was a troublesome and risky business; for, however impressively the sitter had been warned to sit still and take no notice when the cloth was withdrawn, the sitter was more frequently startled than not, and movement was almost inevitable, at least in the first plate exposed. It is to the skilful use of the hand-screen, we believe, the subdued effect of linen is chiefly due in American pictures; and it is undoubtedly a result worth emulating. We subjoin a diagram and some hints on the



subject which recently appeared in Anthony's *Bulletin* in relation to a screen recently patented, in the United States,



by Carl Meyer. It may be suggestive to those of our readers who wish to avail themselves of such aid; and as the screen is not patented in this country, all the hints are fully at the uncontrolled service of English photographers.

"The cut represents Meyer's patent hand-screen and reflector, the latest and best thing out for controlling the light. It is conceded that the use of the common hand-screen in a variety of forms is the best possible method of controlling the light on the subject, permitting, as it does, the placing of the sitter near the middle of the strongest light, thereby shortening the exposure without producing harsh effects. This principle of the screen itself has been long known and used, and is not patentable; but new apparatus for supporting or wielding it is, and the apparatus we would call your attention to is the simplest, cheapest, most convenient, and effective yet invented for supporting a screen or reflector in any possibly required position.

"It is made of three walnut sticks, each four feet long. Two of these cross each other to stretch the screen, which is simply fastened by four tacks. The third stick has a metal handle at one end, while the other end is loosely screwed to the crossing of the screen stretcher. Near the handle the staff passes through a universal joint made spherical for symmetry. This completes the attachment. It weighs two and a-half pounds, and when shipped it packs into a bundle four feet long, averaging about one inch thick, and so can be sent cheaply and without fear of breakage. When used, a socket in the sphere fits over the top of any head-rest shaft as a support for the whole. As a preferable support we make a base of metal with column of wood, and shaft of hard wood or gas pipe, adjustable high or low; thus lightening and cheapening it, and making it very difficult to upset, as the weight nearly all lies in the base.

"The apparatus is wielded by the metal handle, and the peculiar universal joint permits complete revolutions of the screen in any place. The screen also revolves upon the end of the staff, and the staff itself twists in its joint, thus allowing the screen to be placed in any position as freely as if supported by the hand alone. The metal handle serves as a perfect counterpoise, and the slight friction of the parts retain it fixed in any position when the hand lets go. It can instantly be raised or lowered in the column to suit standing or sitting pictures, without carrying it bodily from right to left. It has no machinery about it, no dangling weights, pulleys, or cords to catch. As a reflector alone it is unequalled, and, when inverted, forms a concave reflector by the sagging of the cloth, whereby light may be concentrated upon any spot alone. When used both as screen and reflector, it will correct all the faults of a defective skylight except leaking, and by its finer effects of light can be got more conveniently than is possible in any other way.

"*Directions for Use.*—Cross the two light sticks for a screen-stretcher, and at their junction screw the end of the weighted staff. The spherical joint slips over the top of the upright rod of any ordinary head-rest, and screws down, but not so tight as to prevent moving easily. A square yard of cloth may then be attached by four tacks in the ends of the screen-stretcher. Next adjust the weighted staff so as to exactly balance in the spherical joint, and the screen will then be found moveable to any required position, always perfectly poised, and remaining firmly fixed when the handle is released. The screws may be tightened if the apparatus moves too easily. The attachment is wielded by the weighted handle, the intention being to control the light by reflecting it on the subject or screening it from too direct light, and any desired effect is instantly attainable. If the apparatus is used solely as a reflector it will save space if the screen-stretcher is attached about fourteen inches from the end of the staff, and the screen itself is loosely stretched so that when the frame-work is presented to the sitter the screen

sags into a concave reflector, to concentrate light on any one point when desirable.

"As the result of several years' experience with the screen, we advise the use of paper cambric as not requiring any hem, and cheap enough to throw away when soiled. White softens the light, but does not control it, and is recommended only when it is required to flatten the effect in whole-length figures. Coloured screens, pink or pale yellow, or any non-actinic shade approximating to the colour of freckles, tan, or scars, are influential in lessening retouching on negatives, as the face is lighted all one colour. For a semi-opaque screen or for a reflector this will be found more generally useful than any other.

"For perfect control of the light by a screen we recommend the opaque or black screen, when the head or face is the sole object. It is somewhat more difficult to control in the hands of inexperienced or unartistic operators, but the effects are more brilliant, and the requisite softness is obtainable by moving the screen farther from the subject and out of the camera's view.

"As a screen over the camera itself it confers all the advantages of the theoretically perfect tunnel light, with none of its defects, thus lighting the subject properly, and shading the camera."

### THE PRACTICAL PRINTER IN AMERICA.\*

PRINTING has too commonly been regarded amongst photographers as a common-place and easy operation, which might be relegated to the care of boys and girls, with, perhaps, a little supervision from an experienced person; and the skilled printer who devotes himself solely to that branch of the art is rarely as highly remunerated as the equally skilled operator. If the whole art of printing consisted in producing a moderately accurate impression from a negative, and nothing more, nothing would be more simple and easy. But, properly estimated, the business of the printer is something much higher. The skilled printer must be able to produce, not simply the best impression of which a negative is capable, but he must be able to produce, if necessary, a much better picture than any simply printed impression can present. He must not simply be master of the various modes of vignetting and masking to produce various shaped medallions, but he must understand the art of masking, shading, toning-down, and double printing, with a view to artistic effect. He must be master of his methods, so as to produce the varied tones which may be required with certainty and evenness. He must be able to prepare his materials, keep them in order, and recognize and rectify disordered conditions. He must do this with the least possible waste of paper and other material; and he must be able to secure the nearest approximation to permanency which can be hoped for in silver printing on albumenized paper. These are some of the leading qualifications of a printer in an ordinary photographic establishment. If he can print well by development on collodion and paper; print well on plain paper and on opal glass; and has some acquaintance with the various permanent printing processes, so much the better. But it will be admitted that the possession of an approximate mastery of the details we have mentioned involves an amount of accomplishment in the art not usually possessed by boys and girls, and entitles the possessor to a position not in any way inferior to that of skilled hands in any branch of the art.

Notwithstanding the real importance of printing processes, it is curious how comparatively little has been published on the subject. In all manuals it, of course, bears a part, but often a small one; and, with the exception of one or two treatises, no work has been devoted to

\* "The Practical Printer: a Complete Manual of Photographic Printing. By CHARLES W. HARN. Containing Full Details concerning all the Styles and Processes of Plain and Albumen Paper Printing, and of Printing on Porcelain." (Philadelphia: BENJAMIN and WILSON; and London: PIPER and CARTER.)



the subject. In the work before us, however, silver printing and everything connected therewith is treated most exhaustively, and the work is evidently that of a practical man who speaks out of the fulness of his own experience in every branch of regular work, as well as with familiarity of the various forms of fancy printing, which have prevailed more in America than in this country. Mr. Hearn manifestly thoroughly understands his work, and is, moreover, a clear and vigorous writer. As we intend making some copious extracts from this work, with comments and suggestions, we will commence with the author's introductory remarks on the printing room. He says:—

"For good success at printing it is necessary that the printing room should be convenient to work in, and well supplied with those materials, &c., which are so necessary for fine work.

"A good printer, like a good surgeon, may do very well with a few conveniences, but he will more likely do better with more. A good draughtsman may do very well with his pen and parallel rulers, but he can do much better by the use of a set of instruments, and that necessity, a 'T square.'

"The term instruments, in the general sense of the word, is applied to anything by which an effect is brought about, and consequently our printing boards, vignette blocks, &c., are instruments in the case of the photographic printer as well as the ease of surgical tools are instruments in the hands of the surgeon. A skilful workman, when once asked, by the foreman of an establishment, what was the instrument he had used to enable him to do his work so nicely, replied: 'My hands are the best instruments I have outside of my brain.'

"So it is with the photographic printer, for his hands are subordinate to that mightier and more valuable instrument, the brain; and consequently a 'thinking man' is far more successful than a merely mechanical one (although the latter may have all the conveniences possible), for 'the brain conceives what the hands execute,' and if a person does not use his brain to good advantage, verily his work will show it.

"Now the whole attention of the brain can be used very advantageously in the printing room of the gallery, as well as in the 'skylight and the dark room.' There is a great mistake often made in the 'fitting out' of a photographic gallery, in placing about all of the money in the 'reception room,' and leaving a few dollars to go into the printing department, and a few more, perhaps, in the dark and operating rooms. A good housewife does not commence at the parlour and furnish down to the kitchen, but she commences first at the culinary department, and after she has furnished that (her work-room), she then commences to furnish her sitting room, and finally her parlour. This is the way it should be with the photographer: he should look first to the skylight and then to the nicely fitting out of this, the operating room, which, of course, includes the cameras, lenses, backgrounds, &c. He then sees to his dark room, and next, but by no means least, he sees to the printing room; and then, finally and lastly, to his reception room, which he furnishes as his means will permit.

"An elegantly furnished reception room does not vouch for good work, although it may indicate that the proprietor had money, or that he had found somebody who would trust.

"A customer, when she wishes her 'likeness taken,' does not look to see if the reception room is nicely furnished, and thus decide as to whether she will be suited or not; not at all—she wishes to see samples of work, and then decides. And since this is so, should we not endeavour to have conveniences, &c., in doing our work, so that the samples and work in general will be excellent, since it is this, and not the elegance of the reception room, that brings in the customers?

— "Another illustration that the elegance of the apart-

ments, &c., is not the criterion by which the customer judges the work of the photographer, is very well illustrated in that of a well-known Parisian gallery, where the patrons of the establishment are obliged to leave their carriages at the entrance of, and walk through, a narrow lane, up three flights of stairs, and directly into the operating room, as the gallery has no reception room whatever worthy of mention. The ladies usually make their engagements through a gentleman friend, and then proceed, all attired, in their carriages to the studio, and are then immediately posed. It may be well to mention here that the patrons are obliged to keep their engagements to within five minutes or so, or they lose their appointment for that day.

"The general opinion among photographers is, that any place will do for a printing room, and it is on this principle that printers are so well known to have very inconvenient rooms, &c., where they almost invariably are obliged to labour under extreme difficulties. Printing rooms should be so arranged that the poor printer will not freeze in the winter nor roast in the summer; and, outside of the printer's own personal comfort, the temperature of the rooms is a matter worthy of the strictest attention on the part of the photographer, or else he cannot expect good work; and if he does expect it, without proper attention being given to the conditions under which the negatives are printed, then he is sure to be disappointed.

"The negatives should no more be printed out of doors in the winter time (more especially if the day is very cold) than they ought to be taken there, posing and all being accomplished, while there is light sufficient to enable the photographer to 'take a picture.' As before said, the fitting out of the printing room is a matter of the utmost importance, and although it has not been recognized by the many photographers, yet it has by the few."

Mr. Hearn then proceeds to describe certain printing and toning rooms in Portland, which he considers models of excellence. In our next we will follow him into some details of practical work.

### THE TRUTHFULNESS OF PHOTOGRAPHY.

A CURIOUS episode in connection with the Tichborne case has just been revived in the *Englishman* (a journal conducted by Dr. Kenealy) which closely concerns the trustworthiness of photography as a recorder. It will be remembered that the Lord Chief Justice referred on the bench to the photograph of the "Grotto," which had been produced in evidence, as having been "concocted," and reflecting the highest disgrace on the producer. It transpired about the time that the photographer was Mr. Wyatt, of Fareham, a gentleman, as we then remarked, standing high in his profession as a very skilful photographer. Such a statement from the bench was necessarily of a very damaging character, and the only explanation which at the time appeared was a statement from Mr. Guildford Onslow, to the effect that the photographs presented a perfectly honest transcript of the scene at the time they were taken, which was at the latter end of summer, whilst the Chief Justice had visited it in winter. This was the only vindication Mr. Wyatt received at the time against this painful charge. It appears, however, that Mr. Wyatt at once wrote to his lordship making explanation and protest, and offering to submit the negative for examination; but no notice was taken of his letter in court, nor was any answer received. Under these circumstances Mr. Wyatt forwarded his letters to the *Englishman*, and also sends us copies, which, in vindication of his professional reputation, he asks us to publish. They are as follows:—

"1, West-place, Fareham, Hants., 20th January, 1874.

"My Lord,—May it please your Lordship, in last Wednesday's report of the trial of the Claimant for perjury at the Court of Queen's Bench, your Lordship, in discussing the point about the



'Grotto,' made use of the following remarks respecting the photograph of that place:—'I was never more astonished in my life when I visited the place after having seen the photograph of it. I could not have supposed that the photograph could have so disguised it, and it reflects the highest disgrace and shame on the man who concocted it.' I beg most respectfully to inform your Lordship that I am an artist of many years' standing, and am honoured with the patronage of a large circle of highly-respectable and influential people, whose good opinion I am most anxious to retain and merit.

"With regard to the photograph in question, I can only say that having been requested by Mr. Guildford Onslow, M.P., to visit the 'Grotto,' and take some views of it, I went, accompanied only by my assistant, and after having made a careful survey of the place, I selected those parts which I deemed most suitable to give a correct view of the place.

"My apparatus was of a first-class quality, and I used my best judgment in taking the views, which, notwithstanding the unfavourable state of the weather, I consider successful.

"They were taken in the beginning of September, and consequently would not exactly correspond with the appearance of the place in the month of November.

"However much the severe censure your Lordship passed upon me and my work may tend to injure my character and business, I have the satisfaction of knowing that I did my best by the aid of nature to produce true representations of the object.

"Your Lordship must be aware that a photographer can only falsify by tampering with the negatives; and I am willing to submit them, either for the inspection of your Lordship, or to any experienced artist your Lordship may be pleased to appoint. It is with great timidity I venture to address a gentleman occupying the high position your Lordship does, but I cannot help feeling that the more exalted the station and character of the censor, the deeper must be the wound to my personal feelings, and the more serious injury to my moral and professional character.—Awaiting your Lordship's reply, I have the honour to be, my Lord, your Lordship's most humble and obedient servant,

"ARTHUR WYATT.

"Lord Chief Justice Cockburn, Queen's Bench, Westminster."

"1. West Place, Fareham, Hants.

"21st February, 1874.

"MR. LORD,—May it please your Lordship: Being desirous of showing your Lordship the marked difference in the 'Grotto' now, and when I photographed it in September last, I have within the last ten days attended at the spot, and, with the permission of the tenant, taken another photograph of it from the same point as the one taken in September, both of which I now take the liberty of forwarding for your Lordship's inspection. I would also take the liberty of informing your Lordship that one reason of the marked difference is, as I was informed by the tenant of the mill, on account of a number of sheep being in the Grotto several days since the first photograph was taken.—I have the honour to be, my Lord, your Lordship's most humble and obedient servant,

"ARTHUR WYATT.

"The Lord Chief Justice of England, Sir Alexander Cockburn, Bart., Queen's Bench, Westminster."

It is quite beyond our province to enter into comment of any kind upon the trial in question, or any of its incidents; but it is impossible not to sympathize with Mr. Wyatt in his mortification on receiving a public censure without the means of equally public explanation and vindication. The *Englishman* regards it as a flagrant example of conscious and intentional injustice—a view of the case which can scarcely afford Mr. Wyatt any satisfaction. Whilst in justice to Mr. Wyatt, if not of vital importance to justice in the case, it would have been desirable that some publicity should have been given to the letters in court, it should be borne in mind that the judges were at the time inundated with letters on the case, the majority of which were, if we remember rightly, as announced from the bench, put aside unopened, attempts to influence the court by indirect evidence or argument being very properly resisted. We cannot with certainty indicate the best or proper mode which should have been adopted by Mr. Wyatt to set himself right; but it is probable that he ought to have communicated with the counsel for the defence, who could have brought the matter before the court in due course. At any rate, we apprehend that pub-

lication of his letters now vindicates Mr. Wyatt from the charge of either bad faith or incapacity in the eyes of his patrons and professional brethren.

## PORTABLE TENT.

BY J. H. B.

AFTER many trials in making tents for the wet process in the field, I have fixed upon one which I have found most efficient and convenient, and which in the minor details of construction, I think, possesses some novelties. It consists of four upright poles (*a b c d*, fig. 1) 6 feet 6 inches high, made of deal one inch square, and rounded towards the ends, upon each of which a brass ferrule is placed. The two poles on each side of the tent (*a b* and *c d*) are con-

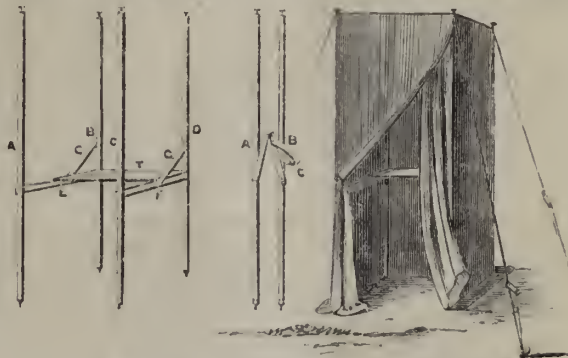


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 1 shows the poles and table without the cords and covering; fig. 2, two poles (*a* and *b*) as placed for packing; fig. 3, the tent ready for use, two of the cords not being shown.

needed by crosspieces (*e* and *f*) 2 feet 6 inches long, 1½ inch deep, and ½-inch thick, hinged in the middle, and working on pivots at each end, so that the two poles may lie close together for packing (*vide* fig. 2, which shows them slightly separated.)

When the tent is erected, these crosspieces are on the inner sides of the poles, and upon them the table (*t*), consisting of three half-inch boards 2 ft. 6 in. long and 6 in. wide, tongued and grooved and hinged together so as to fold up, rests. The table is retained in its position by a small stud entering each of the poles (*b* and *d*) about a quarter of an inch, and a hook and eye at each of its other corners, thus having the effect of rendering the joints in the crosspieces (*e* and *f*) rigid. Two straps (*g g*) nailed on these latter, near the hinges, and to the upper parts of the adjoining poles, assist in bearing the weight of the table, and easing the strain upon the hinged joints. The cover of the tent, which is made of black calico lined with yellow, and which reaches down to the ground, is fixed to the poles, and is never taken off. Thus the whole arrangement consists of only two parts, the tent and the table. To the top of each pole a light cord is fixed (outside the covering, of course) of suitable length, and having the usual means for tightening each cord, instead of going round a notch in the wooden peg by which it is secured to the ground, passes through a hole in it, which prevents the peg from becoming detached and lost, and keeps each on its proper cord ready for driving in. A glass window (not seen in figures) three inches wide and eight inches high, having a wooden shutter, and capable of being opened to admit air, is inserted in a light wooden frame let into the calico just above the operating table. On the left side (*a b*), just below the crosspiece, is another window formed of yellow calico. At this window the development is performed, the operator sitting on a box, stone, or other temporary support, and all washings and spillings going on to the ground. By a simple arrangement of double curtains along the side (*a c*) a door is formed, which is perfectly secure against the admission of light; and a piece of



coarse canvas, six inches wide, sewn along the bottom of the calico, covering and lying close on the uneven ground excludes all light from that quarter, stones or other weights being put on if necessary.

This tent will stand almost any amount of wind, and is extremely roomy and convenient to work in, and I have used it successfully with the thermometer at  $115^{\circ}$  in the shade, generally leaving the window and door open on going out.

To erect the tent, drive in the two pegs belonging to poles *b* and *d* as nearly as you can guess in their proper places. Raise the tent up by holding *b* and *d* in the hands inside the covering; then stretch out the crosspieces, and when the covering is tight on the three sides, *ab*, *bd*, and *dc*, and the interval between *a* and *c* is equal to *bd*, push the poles down, so that the short pins which are at the bottom of the poles shall just enter the ground. By laying hold of one of the two remaining cords, the tent will be kept in its position while a third peg is driven in and its cord tightened; and the fourth will render the whole secure. Now put the table in its place, and fix it with the hooks and eyes. Five minutes is ample time to do all this, and two minutes for taking the tent down and rolling and tying it up, for which latter purpose the stretching cords are used.

In travelling, the tent and tripod legs, which are nearly as long as the tent poles (so that the camera may be placed on a level of the eye of a person standing), are made up with the table in one package, which is light enough to be carried by a small boy. Instead of the table of boards, a box with divisions for the various bottles, &c., might be substituted, and would save trouble in packing.

#### NOTE ON THE MEASUREMENT OF THE CHEMICAL ACTION OF SOLAR LIGHT.

BY DR. T. L. PHIPSON, F.C.S., ETC.\*

THE method employed by Messrs. Bunsen and Roseoe having been recently called in question, as leading to an exaggerated conception of the amount of chemical energy in the solar rays, Marehand† has had recourse to an apparatus which is merely a modification of that invented in 1859 by my lamented friend Niépce de St. Victor. In this apparatus light acts upon a solution of ferric chloride containing an excess of oxalic acid, and the chemical intensity is measured by the volume of carbonic acid evolved.

Many years ago I made some experiments on this subject in Paris, and described a method‡ which I believe capable of giving more accurate results than any hitherto obtained. Having discovered that a colourless solution of molybdate of ammonia in sulphuric acid became greenish blue when exposed to the sun, and colourless again during the night, and that the amount of chemical action exerted to produce this tint may be accurately determined by a dilute solution of permanganate of potash, it suffices to operate always upon the same quantity of substance, and to expose it to the light for the same period of time, and in every respect in the same conditions, in order to possess a perfectly accurate process by means of which the problem of the chemical intensity of solar light may some day be solved in a completely satisfactory manner.

#### ECONOMY IN PRINTING.

BY J. H. B.

IN printing large numbers from the same negative, the following plan is not without advantage as saving both time and materials, and making all the copies exactly alike. Having determined upon the exact shape and size of the finished photograph, as well as the parts of the

negative to be included, cut out with precision, in thin paper, an opening of the same size and form, place this on the face of the negative in the required position, taking care that the vertical lines of the picture are parallel with the sides of the opening, and fix it there by sticking it to the face, or, turning it down, to the edge or back, with gum or bee's wax (preferably the latter, as it does not wrinkle the paper). Sensitize the positive paper in sheets of the largest size convenient, and, having marked it off in pencil on the back into pieces of the exact size of the opening in the mask, cut them out with a sharp knife on a strip of glass. In printing, each piece is laid in the opening of the mask, and exposed as usual.

By this method the least possible quantities of paper, sensitizer, and other solutions are expended; each print is most accurately and neatly cut, ready for mounting; all the copies take in exactly the same parts of the negative; and the uprightness of the vertical lines is easily preserved. Oval, circular, or vignette pictures may be done by the same means.

#### Correspondence.

##### BEER FOR DRY PLATES.

SIR,—I thank you for your courteous notice of my communication regarding Captain Abney's beer process. I fully concur in your remarks respecting the difficulty of obtaining, in many cases, accurate formulæ; but, with regard to the beer, permit me to say that I believe it to be a great element of success in this process—so far, at least, as *rapidity* is concerned—for the following reasons.

My first experiment was made with some of Whitbread's bottled ale, and I obtained successful negatives, giving the brown colour stated by Captain Abney to be the result of "proper exposure and good manipulation;" but these plates received six times the exposure necessary for wet negatives.

My next experiment was made with some beer brewed at Newport, the water for which is drawn from Carisbrooke, and is identical with that in the celebrated well within the castle. These plates required double the exposure of those above referred to, and the colour was of an indefinable kind of deep green—very excellent, however, for printing purposes.

My third trial was made with some Shanklin beer, and the result was unsatisfactory, the deposit being of a blue-black colour.

My fourth experiment was conducted with what is known as "Anglo-Bavarian" ale—very excellent for drinking purposes, but totally useless (to me, at least) for dry plate work. I failed with this beer to start with, but I attributed my failure to other causes, until I had closed up every avenue of escape from my dilemma but the beer, which I at last proved to be altogether unsuitable for the process. Out of twenty-four plates prepared for the express purpose of testing this particular beer, I did not obtain a single negative that was not fogged, dirty, and insensitive; fabulous exposures in bright sunlight failed to give detail, even in the high lights. I have ascertained that this ale is brewed at Shepton-Mallet, in Somersetshire, and it is possible that the water is not suitable for photographic purposes.

It was for the above reasons that I wished to ascertain what kind of beer Captain Abney had found to be the best, and it would be interesting to know if he has experienced any such difficulties or failures as I have detailed, as I feel sure that the beer has a great deal to do with success in his process.

I would, in conclusion, beg to refer to an excellent article in the present YEAR-BOOK, by Mr. P. Le Neve Foster, in which, referring to want of accuracy in description, he very truly remarks that "from want of attention to this

\* *Chemical News*.

† Marehand, *Journ. de Chim. et Phar.* [4], xviii. page 417, 1873.

‡ Phipson, *Comptes Rendus*, Paris, 1863.



point, it frequently happens that the whole value of the communication is lost."—I am, sir, your obliged servant,  
July 27th.  
D.R. PROCESS.

[As we have said before, the most precise statement of formulæ which can be given is always desirable; but we fear that the interesting statement of our correspondent's experience regarding beer furnishes evidence rather than the advantages of the beer process must be confined to photographers residing in certain districts, than that the formula was faulty. Supposed Captain Abney had said pale ale from a Rochester brewery, or from the canteen at Chatham, the statement, though precise, could not have been of much value, as photographers generally could scarcely have obtained the same sample.—Ed.]

### COMBINATION PRINTING.

SIR,—My way of combination printing, in which the conditions laid down by Mr. Tilley can be fulfilled, is as follows.

Take the portrait on a white background, and make duplicate register marks on both portrait and background negatives, at the two bottom corners, like a capital L. Place the view negative over the portrait negative so that the register marks coincide, and paint out the figure with black varnish, keeping within, rather than without, the outline, after Mr. Bovey's manner. The edge may be softened more, where required, by partially wiping the edge while wet. When dry, it may be further amended, where the hard cutting lines come, with a penknife, the blocking out being on the back of the negative. Print the portrait in the usual way, only have the paper a little longer at the bottom of the print. Now take the print and register it with the L-shaped marks on the view negative; turn the bottom edge of the print round the bottom of the view negative, and fasten with a little gum, to keep it in register. It may now be printed in an ordinary printing frame. If carefully done, no join will be seen.

I may say, in case of a profile face on a black background, the background negative will require touching on the face-side also, down the face; but this will scarcely be required in the hands of a careful printer.

I claim that my system is much quicker than Mr. Bovey's when more than one print is required, and equal to Mr. Tilley's, if not the same.—Yours respectfully,

HENRY GREGGON.

### THE SENSITIVE GELATINE PELLICLE.

SIR,—On comparing my letter to you with Mr. Kennett's answer, it struck me that Mr. Kennett's pellicle must indeed be sensitive, and I do not wonder if others have found a difficulty in that respect.

Grammar says, two negatives make a positive; I will endeavour in this case to make two positives create a negative, so I will try again, and send you the result.

I beg to assure Mr. Kennett that the case containing the pellicle sent to me was wrapped up in one "scanty covering of white paper."

I tested his preparation on plates dried spontaneously, as well as dried on a tin containing a little water of about 120 degrees. Mr. Kennett seems to know the result I wrote about well; his description of the film *bursting up* hits it off to a nicety.

As regards my duty, I considered it solely as due to myself to test a process so much wanted, and described as so certain. I shall be glad to hear from your columns of the success of others who have tried it; hitherto I have only seen accounts of failures, which, from Mr. Kennett's letter, seem numerous. Perhaps his success is due to some little omission accidentally made in his instructions.

I beg to assure Mr. Kennett that I had not the slightest idea of running down his sensitive pellicle when I wrote, and only did so in the hopes of eliciting the experience

of others, as suggested by you, Mr. Editor, in your columns.

Did I not live so far from London it would give me the greatest pleasure to call on Mr. Kennett to express personally my regret for ruffling him, and to gain experience in delicately handling his sensitive pellicle.—I am, Mr. Editor, yours faithfully,

W. J. C. M.

28th July.

### Talk in the Studio.

**SOUTH LONDON PHOTOGRAPHIC SOCIETY.**—The members of the South London Photographic Society met on Saturday last at St. Peter's Rectory, Walworth, to partake of the graceful and kindly hospitality to which the Rev. F. F. Statham, M.A., President of the Society, in accordance with his annual custom, invited them. The occasion was, as usual, one of unmixed enjoyment to all present.

**TRAMPS IN THE TYROL.**—Those of our readers who contemplate a few weeks' holiday ramble cannot do better than obtain "Tramps in Tyrol," by a gentleman whose name is well known to them—Mr. H. Baden Pritchard. The volume contains the adventures of the author and three travelling companions, who rambled in their own fashion somewhat out of the beaten track untrammelled by conventional rule as to route or transit. To those who can secure the time, nothing can exceed the delights of such pedestrian experiences. Mr. Pritchard's volume is something considerably more than a guide-book; it is a pleasant, genial companion, as full of interest and fun as it is of information. The photographer will have only one regret on reading it, namely, that details are lacking as to the experiences with the pocket camera and dry plates which the author so successfully employed. There are a couple of capital illustrative vignettes and frontispiece by Mr. John Proctor.

**ROYAL PHOTOGRAPHY.**—We learn from the *Standard* that "the two eldest sons of His Royal Highness the Prince of Wales—Prince Edward and Prince George—honoured Mr. Melhuish with sittings for their portraits on Monday last, at his studio, York Place, Portman Square."

**SANITARY HINTS.**—It will interest many of our readers to know that the publishers of this journal have reprinted in the form of a small twopenny pamphlet the "Sanitary Hints for Photographers," by Dr. Napier, which we recently published. The information on the subject generally, and especially on poisoning by photographic chemicals, and the suitable antidotes, is so valuable and important, that every photographer ought to have the work at hand for immediate reference in case of accident.

**SOLAR PHOTOGRAPHY.**—Dr. Sellack, of the Cordoba Observatory, has been experimenting on photographing the solar prominences without a spectroscope. He absorbs the violet rays of the sun's image by interposing an iodide of silver film, and then seeks to obtain an image on iodised collodion, which is sensitive only to the violet and indigo rays. The image will thus be formed by that portion of the spectrum which can pass through the film and act on the collodion. He has not yet succeeded in obtaining a decisive result.—*English Mechanic*.

**EXHIBITING PHOTOGRAPHS.**—The *Scientific American* says:—"The effect of photographic transparencies in the microscope, as well as on the screen, is greatly improved by placing a pale blue glass in the path of the illuminating beam. This corrects the brown or 'foxy' tone which they too often present, and gives depth and richness to the shadows."

**A TIGHT BATH-HOLDER.**—Mr. L. A. Deromo, writing to *Anthony's Bulletin*, gives the following hints:—"Porcelain bath-holders, as many may have experienced to their loss, are very bad receptacles for the silver solution. For my part, I have found but one out of a number I have which could hold the silver without broaking. Every now and then I had to scrape off the crystals which formed on the outside of those sieve-like holders; and the inside lowered and lowered incessantly, to my loss. I painted, varnished, shellacked some of them; but no go; out the silver went. So at last I devised the following method, which beats all:—Make a tight box of good wood, one-quarter of an inch thick, to fit on your bath, but leaving a quarter of an inch space between the porcelain and wood all around and under. Glue, inside and on the bottom, a few small cones of wood, so that the least surface comes in



contact with the bath. Now warm your porcelain, wipo it clean, slip it into the box, and pour between the two pretty hot beeswax to which you may add a little resin and turpentine. Set aside to cool. Your bath will be then much better than a new one."

**MAKING CHLORIDE OF GOLD.**—Mr. H. J. Newton, referring to his method of preparing chloride of gold from coin, says:—"I take 2 drachms of nitric acid and 3 drachms of hydrochloric acid; in that I dissolve a five-dollar gold piece (equivalent to a sovereign). That is pure enough; the copper is an advantage rather than a detriment. In this way you have 135 grains of gold. Reduce that so as to have 8 grains of gold to the ounce, or 1 grain to each drachm, and you will always know when you pour it out how much you have. That will give you about 16 or 17 fluid ounces to a five-dollar gold piece. That will keep. You may put in salt if you choose; I sometimes do that. This solution will go farther than any you buy. A few hours before you use it, neutralize it with bicarbonate of soda, borax, or any of the alkalies, according to the tone you desire. Bicarbonate of soda will give you a brown tone, and borax a black. Make it up a few hours before you want to use it, so that it will turn litmus paper blue, and I do not believe you can prepare gold to make better tones. When you make this solution it is acid, but you can neutralize it with bicarbonate of soda down to the point where a drop of it will turn green, or you can make it perfectly neutral, and add a little *aqua regia*."

**CHEMICAL ACTION OF SOLAR RAYS.**—The notion that chemical action is not confined to the blue ray, suggested by Sir John Herschel, and since elaborated by Professor Draper and illustrated by Dr. Vogel, seems to be gradually gaining ground. In a review by Arthur Schuster, in *Nature*, of a work on the "Science of Painting," by Professor Von Bezold, we find the following:—"In his account of the elementary principles of optics the author abandons the old method of dividing vibrations into heat rays, light rays, and actinic rays. We note this point as it is one which must soon play an important part in physics, and will doubtless provoke much discussion. The author seems to prefer the following method of viewing the facts to the old one:—A body absorbs a certain class of rays peculiar to itself; whether these rays are converted into heat or into chemically active rays depends upon the peculiar properties of the body. In order, however, to include in this statement all the facts included in the old division, we must add that, as a rule, bodies absorbing the ultra-violet rays are thereby rendered more chemically active; and, as a rule, bodies absorbing the red are thereby heated. This method of looking at the matter seems to us to be the one most closely agreeing with the facts. Prof. von Bezold gives, as a proof that the red rays may be chemically active, the fact that, as the green colouring matter of leaves absorbs the red end of the spectrum, as well as the blue, the red rays alone are sufficient to sustain life in the plant. He might have referred to the recent discovery of Vogel, who photographed the red end of the spectrum by mixing a red colouring matter with bromide of silver; and, on the other hand, to the fact observed by Budde, that chlorine is heated by the ultra-violet rays."

**TRANSPARENT GUM.**—A little glycerine added to gum or glue is a great improvement, as it prevents the gum or glue becoming brittle. It also prevents gummed labels from having a tendency to curl up when being written on.

**TO IMPROVE THE ADHESION OF GUM ARABIC.**—It is a well-known fact that gum arabic will not cause some kinds of blotting paper to adhere. This may be remedied by adding, to eight ounces of the concentrated solution, sixteen grains of aluminium sulphate. Alum answers also, but not so well.

## To Correspondents.

**TWIN.**—If you had stated details of your operations, we might probably have been able to indicate at what point you probably fail; but when you say you enlarge in the copying camera in "the usual manner," you afford no clue to the failure. There are half-a-dozen or more usual manners. As your picture is too dark with the fullest exposure and shortest development, try a shorter exposure and short development. Are you sure that no light reaches the plate except that which passes through the negative? Do you develop with pyrogallie acid or iron? The former is preferable, and you may probably, in any case, increase the proportion of acid in the developer.

**IGNORAMUS.**—There is no work on the production of photographic transparencies; but many articles on the subject have appeared in the *PHOTOGRAPHIC NEWS*, and in the various issues of the *YEAR-BOOK OF PHOTOGRAPHY*. If you state with which process you are most familiar—whether with the wet process or dry processes, and if the latter, which of them—we can probably give you some hints as to the best mode of proceeding.

**T. H. C.**—Your question is scarcely clear. You ask which is the quickest dry process, and then proceed to refer to commercial dry plates, leaving us in doubt as to which subject your question refers. One of the quickest dry processes which has been published is the urano-bromide process as described by Col. Stuart Wortley; but it requires skill and experience to work it successfully. The morphia process is quick; so is the beer and albumen process of Captain Abney. The gum-gallic process, with strong alkaline development, is very quick. As for the quickest dry plates sold commercially, we cannot say which is quickest. The Wortley plates, the Russell plates, the quick Liverpool plates, and the quick Hill Norris plates, all have claims, and we cannot undertake to determine their legitimate precedence.

**AMATEUR.**—On the whole, dilute albumen is better than gum for applying to the negative film before varnishing, as being less liable to crack. 2. Yes. 3. Albumen and water alone. Carbolic acid might be added if you wish to keep the solution ready for use.

**WM. STURGEON.**—The address of Messrs. Trapp and Co. is, 1, Budge Row, Cannon Street.

**PHOTO. C. B.**—The probable cause of your silver bath becoming turbid or "milky" after the immersion of a few plates is that it is already over-iodized, and the additional iodide left by a few plates supersaturates the solution, leaving the particles floating, which cannot be dissolved. You used double the proportion of iodide of potassium in iodizing the bath which we should have deemed necessary. In hot weather the silver bath will hold less iodine in solution than in cold weather. Try a portion of the solution—say five ounces—pouring it slowly into five ounces of distilled water. You will probably find it become turbid at once. This will indicate excess of iodide. You may then make up the solution to the proper strength by adding nitrate of silver. If this experiment prove successful you will know what to do with the rest.

**QUERIST.**—We know very little of the subject. We believe there are various colleges on the Continent which grant degrees in absence on the forwarding of certain certificates and payment of certain fees; and, for anything we know, there may be similar institutions in America. But we are not familiar with the subject. Our own honorary degree was granted under very gratifying conditions, being at once unsolicited and unexpected, and without the payment of fees or cost of a farthing for any purpose. We, of course, should never dream of noticing the remarks in question, the animus of which is apparent to everyone, as is also the curious ignorance on the subject which characterizes it.

**DEVON.**—Varnishing a transparency need not spoil it, nor need it necessarily injure it, if the varnishing be carefully done. If the transparencies are produced on wet plates in the camera, they can of course be produced reversed to meet the contingency you mention.

**C. A. OWEN.**—We cannot with propriety recommend lenses by name in this column. If you will send us the list of second-hand lenses again, appending a number to each, we can then indicate by its number which is most likely to answer your purpose. The fourth on your list seems most likely for the work you mention.

**R. J. T.**—We have obtained almost all kinds of tones from the sensitive paper you name; but we have noticed that it has a little tendency to become warm in the hypo bath unless toning is carried apparently a little too far in the gold bath. 2. So far as we know, yes.

**REDWORTH.**—We cannot tell you where you can purchase background negatives suitable for combination printing; but it is probable that a single advertisement in our business columns, announcing your want, and describing the special character of negative you require, would secure you offers at once.

**R. D. L.**—Some of the wide-angle lenses will include an angle of 90°; but, except for special purposes, this is much more than is desirable. About 50° is sufficient for most purposes. When the size of the picture is the same as the focal length of the lens, an angle of little over 50° is included. 2. The sky of a negative should not be quite black and opaque; if it print with a slight tint, a much more atmospheric effect is secured.

**D. G.**—No announcement has yet been made as to the time or place of the exhibition.

Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED

Mr. ABRAHAM, Keswick,  
Three Photographs of Sir J. Woodford.  
Messrs. APPLETON and Co., Bradford,  
Four Photographs of Rev. John Colwell.



## The Photographic News, August 7, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO. NOT SO EASY AS IT LOOKS—ARTIFICIAL ILLUMINATION— A WORD IN SEASON.

*Not so Easy as it Looks.*—It is very strange that, notwithstanding the many kinds of dry plates purchasable at every dealer's, and the sensitive gelatine pellicle now to be obtained, and the many new formulæ that have been published for rapid development and for preserving plates *ad infinitum*, there is no startling increase in the number of pretty pictures produced nowadays. It would seem as if, after all, something more is necessary than merely buying a packet of plates over the counter, and emptying them one by one into the "machine," and taking them out again, exactly in the same way as you would a packet of Horniman's pure tea, which must not be opened before use. You put in plates, and you take out pictures without even so much as turning a handle; and if the pictures are not pretty ones, then the fault is due obviously to the goods inside the packet, and they must be bought elsewhere in future. We fear there are many who think that now so much has been done for them in surmounting difficulties at the outset of the work, that there remains nothing further to do, and that any one may become a photographer. They will be grievously disappointed at the very first trial. You may buy films as clear and sensitive as possible, and yet be unable to get a picture in any way presentable, although the exposure has been well timed, and the camera adjusted under guidance of an artistic eye. One must serve some sort of apprenticeship to a process before it can be thoroughly understood, for breaking open one of the yellow packets, and experimenting with half a dozen plates with developers of different kinds, does not teach much. The photographer is so closely connected individually with his work, that he must perforce learn something about the nature of it to begin with. We are not talking here, of course, of skilful photographers who have worked for years at different processes, for with them success is readily obtained whatever they may attempt. But an amateur who has worked the wet process with tolerable success, by paying care and attention to his work, will find that although some of his troubles may be removed by having recourse to dry plates, there is still very much to be done in the matter before he secures good pictures regularly. It is for this reason that people succeed with one dry process and not with another. The method they have elaborated themselves, and, therefore, know most about, they can work well with; but let them take up a new and strange process, and they begin to grumble. The fact is, they do not give the new films the same fair treatment that they bestow upon their own pet plates. Most of the numberless dry plate methods that have been proposed from time to time will yield good results, if only the operator will give himself the trouble to go into them thoroughly. Witness the comparative results obtained by Russell Mannors Gordon some time ago. This *facile princeps* of dry plate photographers undertook to make a trial of half a dozen different processes, and promised to exhibit the several results at the exhibition of the Photographic Society. When the time came, there were half a dozen pretty bijou views, such as only a Gordon could produce, each one outrivalling the other for delicacy, and every one representing a different process. A better proof could not be given that most dry plate processes will give good results, if only thoroughly understood by the operator who uses them, although, of course, some films are more rapid and simpler in manipulation than others.

*Artificial Illumination.*—Another proposal has been brought forward to obtain a brilliant artificial light. It will be remembered that three years ago Dr. Van Monckhoven read a paper at the Photographic Society of London on the subject of photographic enlargements, and called

attention to the various methods at one's disposal for producing brilliant illumination by artificial means. He directed currents of oxygen and hydrogen upon a pillar compounded of carbonate of lime and magnesia, instead of employing a cylinder of lime only, and in this way increased to a notable degree the already very powerful light of the oxyhydrogen lamp. He also employed at times, when hydrogen was not forthcoming, a spirit lamp of special construction, directing a jet of oxygen through the spirit flame. A slight modification of this light is now proposed by M. Hanneker, which has, it is said, the effect of rendering the light more brilliant still; and if such is really the case, the suggestion is of considerable value to those photographers who employ an oxyhydrogen lamp for enlargement in the winter time. Herr Hanneker makes his cylinder of a compound of carbonate of lime, magnesia, and olivine, the materials being compressed by means of hydraulic pressure. Olivine is a native silicate of magnesia.

*A Word in Season.*—It is well to bear in mind, during the hot weather, the boiling points of the two solvents in collodion, alcohol and ether. The former boils at 173° Fahr., and the latter 96° or 97°. A mixture of the two in equal parts does not give a mean boiling point between these two, for if you heat such a liquid gradually, the ether evaporates first of all, and then the alcohol; but the alcohol, nevertheless, especially when added in large quantities, retards to some degree the evaporation of the ether, and for this reason, as also from the fact that alcohol is much slower in vaporising, photographers should employ a maximum amount of alcohol in their collodion in the summer season. During the past fortnight great care has been necessary in coating large plates evenly, by reason of the rapid setting of the collodion, and the only thing to be done is to add an unusual dose of alcohol. Keeping the stock of plates in a cold dark room, and coating them there, is a better plan still, if one happens to possess such a luxury, for the condensation of moisture afterwards upon the back of the sensitized plate only tends to keep it moist a little while longer.

### FRENCH CORRESPONDENCE.

TEMPERING THE HEAT OF THE STUDIO—PRINTING WITH GREASY INK—COAGULATED ALBUMENIZED PAPER—NITRATE OF POTASH IN THE SILVER BATH—WET PLATE PHOTOGRAPHY WITHOUT A DARK TENT.

In a letter which has just reached me from a provincial photographer, M. Malbret, that gentleman describes a method which he employs successfully in keeping out the excessive heat from his studio, without at the same time interfering with its illumination. The studio, which is eight metres long and three and a half broad, is constructed upon the roof, quite isolated from adjacent buildings. It is not, therefore, in any way protected from the sun except by means of a simple shutter; the glass roof above receiving the sun's rays directly upon it, it is by no means surprising that the temperature often passes above 45° Centigrade. The photographer is compelled at times to suspend work altogether, notwithstanding the establishment of free currents of air throughout the place.

To remedy these grave inconveniences, M. Malbret has covered the upper part of his glass for the whole length of the studio; and at a distance of eighty centimetres from the roof (so as to let the air pass freely), he has constructed a kind of tent, which can be extended and shut up, at will, by the aid of a very simple mechanical contrivance. With this M. Malbret can work at his ease throughout the day in a temperature scarcely more elevated than that out of doors in the shade.

What is remarkable in the matter is, that although the studio is thus entirely covered in with ground glass and a lining of fabric, the exposure required is not longer. The space left between the glass and the tent allows the light to circulate in the same way as the air; but if an instan-



taneous portrait is required—in the case of a child, for instance—it is only necessary to draw back the curtains for a moment to secure a larger quantity of light.

I have received from M. Marzocchini a series of photographic impressions reproduced from clichés obtained from sketches, and taken from nature direct, which are of a most interesting nature. They are examples of a process which M. Marzocchini is working commercially, the pictures being, in fact, portions of a work entitled "Album Livornese." They prove that we have to record still another success in the matter of printing with greasy ink.

M. Herbert père has addressed a few observations to me with respect to the communications of MM. Quiquerez et Thérèse fils, about the coagulation of albumen, which I have already alluded to in my previous letters to the PHOTOGRAPHIC NEWS. M. Herbert thinks, with M. Quiquerez, that dried albumen coagulates with much more difficulty than when in a liquid condition. He also doubts the inefficacy of dilute alcohol; but he differs from M. Quiquerez on the point of coagulating the albumen first of all by the aid of concentrated alcohol, for, according to him, if M. Quiquerez has not obtained complete coagulation, it is simply because he has not allowed the action to continue for a sufficiently long time. At the same time, M. Herbert regrets the employment of alcohol in this connection, for it is far from being an economical substance to use. He thinks that its cost would outweigh any saving of nitrate of silver that might be effected.

M. Herbert has often made experiments with wet bath to which nitrate of potash has been added, without obtaining the good results alluded to by M. Quiquerez. To find out something of the rôle played by the nitrate of potash, he placed a piece of albumenized paper upon a saturated solution of this salt, and two minutes were quite sufficient to dissolve away the albumen from the surface.

In conclusion, M. Herbert says that all the methods proposed for coagulating albumen only jeopardise the most precious qualities of the paper. One sole means has been completely successful in his hands, but he reserves the details of it for the present, merely forwarding a sample of paper prepared by his process, with a request that it may be experimented with. I send you a portion of it to try, merely quoting the advice of my correspondent, which is to the effect that it should not be toned in an acid bath, nor in one too much charged with chloride of gold.

Apparatus for working the wet process without a tent or dark box of any kind are as numerous in France as in other countries, and, notwithstanding the success attending the employment of dry plates, they are still much used. Nearly all of the arrangements resemble each other, but there are some which are more practical than others. Last week I had occasion to experiment with an apparatus which is of a most simple, ingenious, and handy character, designed by a Parisian photographer—M. T. Valette. Its dimensions were represented by a cube of twenty-five centimetres, so that it is handy to carry about, while its weight, with all its accessories, does not exceed ten pounds. The lens, six plates, four baths, bottles, &c., find room within this limited space. Placed upon its stand, which is itself very light, the apparatus represents two boxes superposed on one another; that above is the bellows camera, while the lower one is the laboratory or dark room. The latter encloses the four vertical baths placed beside one another. At the moment of operating, the bottles, placed in a little cupboard at the side, are taken out, and into the first bath is poured nitrate of silver, into the second the developer (pyrogallie solution), into the third distilled water, and into the fourth a sulphocyanide fixing solution. The camera slides by means of a groove upon the laboratory box. The object is focussed in the ordinary manner, and then the plate is collodionized and introduced into the frame in place of the ground glass. This frame is made to descend rapidly (as soon as a string is detached which keeps it in its place) into the compartment below, where

it becomes immersed into bath No. 1, containing the silver bath. After sojourning therein for about two minutes, during which time you take care to move the plate continually up and down, it is drawn up into its proper place again by the aid of the string alluded to. The exposure then takes place, and as soon as this is completed, and the lens capped, then the portion of the camera carrying the frame is advanced as far as the first groove indicated, and corresponding exactly to the spot where below is to be found the bath containing the developer. The exposed plate is let down into it in the same way as before, and after a couple of minutes it is lifted back again to its place in the camera, and the frame is again shifted until a second groove is reached, and the plate then descends again, this time being dipped into a bath of distilled water, where it is kept in motion for some time, in order that it may be well washed. The plate is subsequently introduced in like manner into the fixing bath. After the fixing has been completed—in case there is no convenient spot near to wash the plate—it is again put into the distilled water bath. The only precautions to be taken in making use of this apparatus consist—

1. Before operating a second time, the frame itself must be plunged into water, and then well drained, and care must be taken that there is no water attaching to it when it is again put into the silver bath.

2. The dark cloth which serves for focussing must be kept in front of the instrument during the various operations, especially if the apparatus happens to be standing in the sunshine.

The bath must, of course, be filtered and strengthened at the end of the day's work when the photographer gets home. After it has served for the production of eight or ten clichés, the developer should be thrown away, and replaced by a fresh solution; and the same holds good with the bath of distilled water. The finished negatives are put into a grooved box, which forms part of the lower portion of the apparatus, and which contains room for as many plates as are necessary for the day's work. All the photographer's baggage is thus enclosed in a small volume, the dimensions of which we have already given. By its aid we have produced several pictures from our window, looking out upon the Avenue de l'Imperatrice, near the Arc de Triomphe and Bois de Boulogne. All the plates succeeded very well, and we are glad to bear witness to the compact and handy nature of the little apparatus, the price of which, by the way, is relatively a most moderate one. It forms a very convenient instrument for amateurs, and for tourists especially.

M. Valette has written a little pamphlet, which accompanies the instrument, and which explains the method of working, the simple formulæ employed, &c., forming, therefore, a neat practical little manual.

ERNEST LACAN.

#### PRINTS FOR COLOURING.

PERHAPS no subject has received less attention from photographers than the production of the plain prints intended to be placed in the hands of the artist for colouring. Of course, every portraitist in whose establishment first-class work is executed aims to produce such prints as will best suit the style of finishing it is to receive, or as his especial artist may desire. But the especial fitness of prints for different styles of colouring has been rarely discussed or considered, and in too many cases a general impression prevails that defects may pass in prints for colouring which would be fatal in work intended for issue as plain prints, the skill of the artist being trusted for remedying all blemishes. An exhaustive paper appeared in a recent number of our Philadelphia contemporary, by M. Costelle Edgerley, in which this subject is very fully treated, and much excellent advice and suggestive information given. After dwelling upon the difficulties of the artist in dealing with unsuitable prints, and upon the importance of absolute freshness, cleanliness, and purity in



the whites, without which a perfect and brilliant picture cannot possibly be hoped for, he devotes himself to the question of tone. He says:—

"The tone, I am well aware, is a mooted question among artists, or 'so-called' artists; for he who contends that the brown tone is the proper one does not fully understand his business, and I can prove it. There never can be made a clear flesh and blood face over a brown tone. Especially is it impossible to depict certain varieties of complexion true to life, with their marvellously pure sea-shell tints, and transparent blue traceries of veins. Where the deeper shadows are above the eyes, under the chin, and some other occasional shades, the tone does not matter—it is well enough there; but in the lighter shadows, on the temples, brow, under the eyes, about the mouth, and on the neck and bosom, there should not be a trace of brown; for these are delicate shades, greyish, or inclined to blue or green, and must be pure and transparent, showing no dirty undercurrent of any other colour, and especially any colour made in the photograph.

"The painting which shows the photograph peeping through its colours reminds one of that economical young woman who inquired how much it would cost to have one coat of paint on her picture.

"The photographic print should be used simply for the assistance its outlines give to the production of a correct likeness; that secured, it should be completely covered, painted out, and entirely lost for evermore to mortal vision—only the painting left, with its firm flesh and graceful draperies, standing out independently from the distance of the background."

Blue tones are little better, he thinks.

"There are certain complexions which cannot be painted any more successfully over a blue tone than can some others over the brown.

The perfection of tone for all kinds and descriptions of to-be-painted pictures is, in his experience, "the clear neutral grey, than which there can be none more suitable. For crayons and inks this is the only one that is admissible, inasmuch as it is impossible to hide the photograph in those truly beautiful productions of art when the prints have any approach to colour, as red, brown, or blue. And these pictures, bear in mind, are expected to delude people into the belief that they resemble fine engravings; and properly made they do, only that they surpass them. But do you not see that these coloured faces, stippled with black, bear not the slightest similitude to an engraving, with its pearly lights and effectively transparent shadows? To cover the brown tone of the shadows, the crayon must be ground in until it reaches a density that gives an effect too sooty for any white citizen. This never will do, so the brown shadows and red half-tones must be allowed to look through the crayon; the lighter parts of the background must remain of this same colour, so decidedly foreign and inimical to the supposed object of the picture, and the high lights in the drapery must also take part in the general discolouration.

"When we attempt the portrayal of flesh in colours, on canvas or paper, all acknowledge that there cannot be too great care in searching out in the human face, and perpetuating in the pictured one, all the delicate tints and all the peculiarity and richness of colour that can be found, to make it approach, as nearly as lies in human power, the living, breathing original.

"Many unquestioningly believe that plain paper is to be subjected to like treatment with albumen; they use the same fixing and toning baths, and the same time in each is allotted to both. This is a serious error; and though I do not know the *modus operandi* by which magnificent results are gained, I do immediately recognize a result, be it magnificent or otherwise. The brand of the paper, as far as I have noticed, makes but little difference. The ordinarily used paper is all good if only it receives proper attention and treatment.

"Sometimes the innocent paper passes through such

processes of torture, that it comes forth roughened and coarse-grained, with a surface like blotting-paper; so extremely like, in some cases, that the most carefully laid-on washes leave a hard line wherever the colour stops its flow, which will be without any warning, and on every possible occasion.

"This rough soft paper can be used to better advantage for large pictures; but there is certain failure in any attempt at the elaborate finish required for small ones.

"Still, a really better effect can be obtained even with such paper than with that so glossily smooth that colour will only partly absorb and barely adhere. That the picture should be a permanently enduring creation, the paper must be capable of absorption to such an extent that its fibres can be completely saturated with colour, so that the well-diluted tints can be soaked in, little by little, till it is full to the surface. Such a picture cannot fade or easily be destroyed; but we cannot say as much for these with hard smooth surfaces, on which thick colour must be stippled with a fine-pointed brush. Such can but be the merest daubs, and liable to perish soon from the face of the earth, which is one comfort.

"Now we come to the treatment of copies. We have to copy, often, old card photographs made, perhaps, in early photographic days; as yellow as gold, and the albumen surface veined with seams and crossed in all directions by minute breaks in the albumen. Enlarged to even the ordinary three-inch head, we have the face divided into sections, like a railroad map, by immense fissures and chasms. This has rather a dubious appearance; but there is no cause for any alarm as to the final issue. Only do not make a print from the negative as it is in its native rugged state, and send it to be finished. There will be no high-lights in a print from such a negative: yellow photographs dark—an assertion which, although not original with me, is nevertheless true, and one of which it is too frequently my painful duty to remind many a first-class photographer. Then where the high-lights should be, in this copy of a time yellowed photograph, will be half-tone, possibly three-quarter tone. This cannot be entirely remedied by the artist. By making the shadows very deep he can always brighten other parts of the face by the contrast, and he can (and too often feels compelled to) resort, in addition to his legitimate means, to that crime against good taste, of using chalk for lighting ink pictures, and mixing colour with white paint for water colours. This is detestable, and the more so when five minutes of careful manipulation of the negative before printing would obviate all such necessity.

"Varnish your negatives with retouching varnish; then, with cotton stump and powdered lead, go over all those portions of the face where high lights should be; pay strict attention as you go to the copied photograph, that you may not produce a light where rightfully belongs a shade, and thus make a change in the likeness, which may cause the artist much trouble and labour to restore. Then, with a soft pencil, work along on these crossing and recrossing lines of shade, caused by the breaks, making them to correspond as nearly as possible with the surrounding portions of the face. Better make them lighter, though, than otherwise, for you will remember that white can be made to receive any shade of colour, either light or dark; but that which is printed dark cannot be made lighter, and at the same time present a respectable appearance, for black is independent and obstinate, and will keep its personality, in some degree, to the last.

"Any artist who lives where he can visit the gallery from whence he receives work will be willing to attend to the negatives himself; but if the work has to be sent any distance to be finished, the retouching of the negatives must be left to the photographer, and in most cases he will be not only willing, but anxious, to receive instruction in anything that will better his work.

"I will now mention the orthodox manner of dealing with copies when changes in the drapery are required to be



made. Before beginning, however, I wish to make an apologetic bow to those who know all about it, and say that I am not instructing them at all, only those who need and desire such information.

"Many of you would be surprised to know how lamentably deficient many otherwise good photographers are in this department. If I had not personally instructed so many, and had seen the sad need of instructing ten times as many more, I should be incredulous too. I suppose the reason is, that many had not until quite lately had much copying to do, and feeling more interest in their so-considered more special province of making albumen photographs, have not devoted the necessary time to the ways and means to be employed.

"We occasionally have pictures to copy of gentlemen with high, closely-buttoned vests, which it is desired should be made open in the painting, displaying the white shirt-bosom, collar, and tie. Now, is it not a severe strain on the credulity to believe that any one in his right mind would have so little thought (to speak very mildly indeed) as to send a print from the negative in its primitive state, expecting a brush and water colours to hide this black mass of broadcloth and buttons with the snowy plaits of a shirt? Yet such prints are sent frequently, and very promptly returned. One would suppose that even a stranger to our ways that are so dark would see that this thing never could be done in a way to disguise the apparent fact that the man was suffering from cold, and wore two vests of different pattern, with a very thin white garment between, for the under-vest certainly could show itself through the bosom of the shirt. A piece of paper, the size and shape of this ungainly garment, then, should be pasted over it in the negative, which will cause in the print a white space, wherein the artist has the opportunity of exercising his skill, and manufacturing the missing garments to his own taste.

"Perhaps the background is spotted, clouded, and scratched: then, by the process known as double-printing, make a smooth, even, light background, on which anything can be accomplished; or if the picture is to be ink, the print may be made with a white ground to be finished in vignette form.

"The process of double-printing is a very necessary and quite simple one. First make a print; then cut, with great caution and a keen knife, the face and figure—or all that is to be a part of the completed work—from the remainder, or that which is to be changed. Fasten this discarded background by the corners to the film side of the negative, and allow the face and figure to print as long as is necessary. Then, as expeditiously, and in as dark a corner as possible, remove both background and negative from the printing-frame, insert instead a perfectly clean square of glass, and the new print, which is now on a white background. Now place the other part of the first print over the figure, that it may not become darker, and allow the background to acquire the desired uniform depth. This method is well known and long practised by photographers, but there are many who are quite innocent of ever having resorted to any such expedient.

"Supposing we have a picture of a gentleman with his hat on, sent, accompanied by a description of the concealed forehead and hair, with the request that the hat should be removed. The course to be pursued in this case is to make a print, and cut out the face and form, leaving on the background the hat, together with the deep shadow that it casts on the forehead. Fasten this to the negative (after touching out any dark foreign spots or scratches which may be on the face), and make your print on a white background. The background must not be printed at all in a case of this kind, on account of the forehead, which is better unprinted. In short, every part of a copied picture which is to be removed at all should be blocked out in the negative, leaving a white space.

"The most of my acquaintances among photographers are

large-hearted, and willing to do almost anything for the sake of conferring a favour, if nothing else; and, in addition, their minds are ever filled with the desire of increasing their knowledge and rising higher in their well-beloved art. I am sure it occasions an artist as much sincere regret to be compelled to return a print, with an expression of dissatisfaction, as it does the photographer to receive it, and to number it among his other trials and vexations of the day. I, for one, do above all things dislike to make such a return. It is desirable that there should be greater unanimity between the photographer and artist, and when such a feeling has become universal the many good results will speak for themselves. On all those who desire and work for such existing harmony between our two brotherhoods, I pronounce a benedictio.

## THE INFLUENCE OF "RETOUCHING" ON PHOTOGRAPHY.

BY WILLIAM HEIGHWAY.\*

Looking back a few years at the best specimens then existent of photography, the most casual observer cannot but be struck with the wondrous improvement of late years. This progress is in the artistic, rather than the chemical, manipulation. A look at the negatives of six or seven years back will show that in cleanness and beauty of chemical working they are in no ways behind those of the present day; but what else do they show? Flat, uninteresting lighting, hideous posing, backgrounds flat (or, worse, unmeaning and often impossible painted scenes), and on the human face divine every freckle showing with exaggerated prominence, with an extreme roughness of the skin. In the increased beauty perceptible in the negatives of the present day we see the evidences of many improvements—artistic backgrounds, the lighting of the subject, the shadow effect (labouring under the painful and ridiculous misnomer of "Rembrandt effect"), more tasteful styles of pictures; and last, but not least, the retouching of the negative, to which, in a great measure, is the advancement of late years due. Let me explain that I do not go to all the lengths that the partisan on the side of retouching urges in extenuation of his abuse of this means of beautifying the picture; but I do believe in its right use. It has led us to a higher belief in the power of our art, and with this belief planted in the mind the thoughtful photographer has aimed higher, and is still striving to surpass all that he has yet done, adopting as his motto the ambitious word of conscious power, "Excelsior." By the aid of the pencil the artist is enabled to abolish the black spot which is the chemical rendering of the yellow freckle—almost imperceptible in nature—and this of itself is no mean power; but, beyond this, what scope an artist has in perfecting his picture, by being able to strengthen lights, where necessary, and softening harsh shadows. There are, it is not to be denied, too many who prostitute this power, and so "beautify" that all the nature and individuality of the face are lost, and a marble-like smoothness substituted; but because injudicious and ignorant workers do this outrage on art with the pencil, shall we deny it the meed of praise it deserves, or decri it as a system pernicious and destructive to photography? Rather let us educate ourselves to know how far it may be carried to be a valuable servant, and avoid allowing it to become an exacting master. There are those who, jealous of the power given to the retoucher, affirm that the beauty of the works of great masters in photography is entirely due to the skill of their retouchers; but this is a great mistake, for never yet was a bad negative transformed into a good one by that means. Even were this silly assertion true, it would be rather an argument in its favour—only it exists so: an artistic picture is only to be produced by the photographer who has the artistic knowledge, and knows how to apply it.

\* *The Photographer's Friend.*



## ON THE YELLOWNESS OF NEGATIVES.

BY K. SCHWIER.\*

For some time past I have had to contend with a peculiar phenomenon, which appeared upon many of my plates and caused them to print too deeply. The clichés became in part yellow, and in those places, mostly, where the streaks of varnish were visible, whether these were regularly around the margin, or in the middle of the plate, in case the same had been carelessly varnished.

In January of last year, Professor Vogel called attention to the circumstance, at one of the meetings of the Berlin Society; but no one seemed to be able to afford a satisfactory explanation on the subject. Whilst looking through a series of plates to sort the good ones from the bad, I selected a few of the worst specimens with these yellow patches, that print white upon the picture, and endeavoured to restore them in some way. When the yellowness covers the whole of the plate (as is sometimes the case), the result is a very hard print indeed.

After many unsuccessful essays—exposure to alcoholic fumes, softening the varnish with glacial acetic acid, &c.—I at length hit upon a method which is as simple as the result is successful. The negative is first washed over several times with alcohol diluted with one-fourth or one-fifth its volume of water, just in the same way as if a developer were being applied. In this way the coating of varnish is removed. Singularly enough, most of the retouching remains upon the plate, and is only removed by continual washing in water afterwards. As soon as the plate has been sufficiently freed from the varnish, a ten per cent. aqueous solution of cyanide of potassium, with about double its bulk of alcohol, is employed in the same way, until the yellow spots disappear, even if they are located between the collodion and the glass.

After this, the plate is laid in a dish of water to which one-fifth to one-eighth of alcohol has been added, and the glass moved to and fro for a while. It is then taken out, the film washed two or three times with water, until the last washing does not taste of cyanide any more. The restoration of the cliché is now complete, and when dry the plate is again varnished. The action of the cyanide of potassium is not an un-energetic one, but it is called for by the fact that a negative—especially if much printed—always becomes denser by degrees.

I have come to the following conclusion in regard to the formation of this yellowness. The phenomenon appeared, at first, on those negatives which, soon after their production, are printed without ceasing. Much slower and less energetically is the yellow colour in appearing in plates which are rarely printed, and only have an impression taken off now and then; and it is scarcely to be seen at all in such clichés—in portraits, for instance—from which only a couple of dozen of copies are taken. At first I thought the cause was in the dextrine which I employed; but other plates, I found, became yellow quite as soon. Then I fixed the fault upon the soda-paper pads put into the pressure frames; but the defect continued long after their removal. The phenomenon was observable with plates having a substratum as with those without. I now ascribe the defect to the varnish alone. I used to prepare the latter according to Grasshoff's prescription; but lately I have added more shellac, and made it harder. As it was slightly damp, it attracted some portion of the silver from the silver-paper placed in contact with it, and this salt adhering, the cliché gradually darkens the latter. It seems, therefore, almost impossible to prevent the occurrence of the phenomenon, for if one uses a negative varnish which is not tough, and, consequently, somewhat damp, then splitting of the film becomes rife, owing to its brittle character. But I am in hope that a further addition of shellac to Grasshoff's formula will have the effect of preventing this

yellowness from forming, and I find that the coating is still tough enough, under these circumstances, to admit of retouching as before.

## ON THE COLOUR OF NEGATIVE FILMS.

BY F. WALLER.\*

It is a fact known to almost every operator, that the colour of the negative film has nearly as much to do with its printing qualities as its density; and while this has been noticed and commented upon, both in the foreign and domestic journals, there have been few, if any, theories put forward as to what chemical or other action the colour is due, or why the colour should vary so from time to time under, apparently, the same conditions.

The colour which is conceded to be most desirable is the olive brown, and negatives possessing that creamy appearance produce better prints than those bluish or slate coloured. Now as the colour certainly has so marked an effect, it becomes of vital importance to ascertain what conditions give this colour uniformly, or how this colour can be uniformly produced upon negatives that have it not, without injuring them by forcing them.

Mr. Elbert Anderson (of New York) and I have had some correspondence upon this subject, of which I propose to give the gist to the reader, hoping that while my friend or myself have not arrived at a definite conclusion as to cause or effect, the perusal of this article will stimulate inquiry in this direction, and that other operators will take note of their films, so that by comparison of ideas and results we may arrive at the true cause of coloured films.

Now that all are striving so hard to obtain the softest effects and fullest detail, anything which adds to the printing qualities without interfering with the other essentials is of special interest. Mr. Anderson writes:—"I have tried everything in the developer without effect. Do you think the strength of the developer can effect the film?" After experimenting on both sides, we concluded it was not the developer. I then wrote to Mr. Anderson and suggested that the desired colour might be produced in some way, and mentioned chloride of gold as giving a fine colour; but he soon found out a better plan, and wrote:—"You can get any amount of olive brown on your films by flowing the plate after fixing and washing with a weak solution of cyanide, or by adding enough cyanide to your hypo to fix in half the time." I found it to work admirably, securing good colour films in that way. But neither Mr. Anderson nor myself were quite satisfied, because we have not as yet found the cause of the colour, as it at times appears without any extraneous aid. So we have resumed our experimenting. Having seen it stated that blue films came from cadmium collodion, brown from potassium, we experimented with several kinds, also with the bath in all conditions, strong, weak, acid, and nearly neutral, without marked effect. Different acids were also employed in the developer, but this seemed not to alter the colour.

I was at first inclined to think it lay in the condition of the bath, and that the stronger the coating of iodide of silver, the browner the film. But experiment did not prove this. The time of exposure was then tried; but I found upon short-timed negatives just as good a colour as upon full-timed.

I am rather of the opinion that the newer the fixing bath the browner the film, and when the bath is full of hyposulphate of silver, that affects the colour. But I have not as yet made a thorough trial.

We all have noticed the dull and slatey look a negative has which has been left in the hypo and forgotten; then the hypo had some colouring effect. Perhaps the reason we sometimes have good coloured films, and at others poor, rests with the age of the fixing bath. Let us hear from you, gentlemen of the dark room, and give us your opinion of the matter.

\* Photographisches Mittheilungen.

\* Photographer's Friend.



# The Photographic News.

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## MECHANICAL GRAIN IN PHOTOGRAPHS.

THE use of a mechanical grain, like that produced by stippling or hatching, which is a necessity in lithography, wood cutting, and copper-plate engraving, as being the only mode by which gradation from light to shadow can be rendered, is not a necessity of painting or photography. The painter in water or oil can secure gradation in continuous flat tint. The pictures produced by photography, although, of course, monochromes, possess gradations from light to dark in one continuous flat tint of that monochrome; and in this respect photography would seem, at first sight, to possess an advantage over engraving and lithographic processes. But whilst a continuous tint possesses an advantage on the score of delicacy, it possesses in many cases a certain want of transparency. The painter in oil secures the effect of transparency by glazing a transparent colour over his solid painting, as by working in tints in a manner resembling stippling before the former painting is dry. The miniature painter using water colours, having washed in his tints, proceeds to get modelling, transparency, and richness by stippling. Everyone must have been struck with the inferiority of effect in a photograph, as a rule, when hung, as compared with that of a fine engraving. Examined in the hand, all this advantage might rest with the photograph; but the moment the two are placed at a distance from the wall, the photograph looks heavy and lacking in light and transparency. The peculiar gradation of the engraving, whether in line, stipple, or hatching, has the quality of letting light into the applied tints, which at once removes the effect of opacity and heaviness.

Many photographers have had a craving for some similar effect in photographs, and various modes of securing it have been proposed: printing through ground glass, printing on rough drawing paper, stippling the print in black and white, and other methods. A year or two ago Mr. Faulkner called upon us to ask for information as to the various experiments which had already been made in that direction, informing us that he had just taken preliminary steps for securing a patent for a method he was working out. Unfortunately for Mr. Faulkner, and probably for the public, the method, although less known than it ought to be, and probably nowhere in practice, was not new, and the patent could not be completed. We say probably unfortunately for the public, advisedly; for whilst a strong antipathy to patents is entertained by photographers generally, who have been accustomed, except in rarely exceptional cases, to receive freely, and at once apply unrestrictedly to their own uses, all discoveries in their art,

we are satisfied that in many cases they are absolute gainers by the practice of improvements being patented, provided that the patented method is made accessible upon liberal terms. They are gainers in this way: when one person has a special beneficial interest in an invention, he spends much time, money, thought, skill, and ingenuity in improving his invention to the utmost, and in making it known as widely as possible, because the more he improves it, and the more widely he announces it, the greater are his gains. If no protection exists, no one has any special interest in working out all the possibilities of an invention for the public benefit only, and no one has an interest in calling special attention to the advantages of the invention.

To return, however, to the subject of grain in photographs. The method of introducing grain which Mr. Faulkner proposed, and of which he showed us some charming examples, consisted in introducing a grained transparent screen between the paper and the negative in printing. Our somewhat disappointing answer to his questions as to the novelty of the results consisted in producing an example which we had ourselves produced some years before, when working out experiments in a similar direction. "Why is a method like this not well known, then?" was the natural query; to which our answer was the production of a back volume of the PHOTOGRAPHIC NEWS containing the details. Unfortunately many such things are published, but, for lack of persistent iteration on the part of some interested, and lack of display of examples, such things often gain little attention, and are often forgotten. We had used as a screen a thin sheet of gelatine, upon which had been printed an exceedingly fine aqua-tint grain, the screen having been originally prepared for experiments in securing photo-engraving plates and photo-lithographic stones with a similar grain, as a means to obtaining half tone. The result of printing with this fine aqua-tint grain was in many subjects very pleasing, giving a general softness and transparency to the print generally. Mr. Faulkner's project was to work out the special advantages of various kinds of grain for various subjects, his exquisitely fine artistic taste and his experience in connection with art giving him especial fitness for working out the subject to its most satisfactory issues. Whether he has given the subject further attention we do not know; but we believe it is well worthy of a much fuller and more experimental consideration than it has yet received; and reprinting here the provisional specification, we commend the matter to those of our readers interested in methods of giving to photographs varied art qualities. The specification is as follows:—

"The object of my invention is to improve the effect of photographs produced by light printing from negatives by giving them a lined, dotted, stippled, or any similarly varied ground. For this purpose, according to one method of proceeding, I draw, paint, or photograph on paper, canvas, or other surface, a groundwork such as will give the desired effect on the picture; this may be done in lines, dots, or washes of any design. From this design a negative is prepared on glass, paper, or other surface by any known photographic process. When this negative is produced on glass it is transferred to any thin substance, such as paper, gelatine, collodion, or talc, which may be done in the following manner:—I pour over the negative a solution of gum, gelatine, india-rubber, or any substance suitable for producing a film which protects the negative. When this solution is dry, a tough special collodion, ordinarily called 'transfer collodion,' is poured over it, and when this is thoroughly dry the whole is soaked in water. A strong leathery but transparent film, consisting of the original collodion negative, the protecting substance, and the transfer collodion, can then be removed from the glass to be used as hereafter described. As this mode of producing such a film has been used for other processes I do not consider it part of my present invention, but describe it only in order that my process may be understood. This film containing the negative of the groundwork is interposed between the negative of the picture and the surface on which it is to be printed by light. If the negative of the picture is on collodion film, paper, talc, gelatine, or any such substance, then the groundwork film produced as above described can be used either in



front or at the back of the principal negative, according to the effect desired to be produced. When it is desired that the picture should present the effect of a line engraving, the groundwork negative may be produced from wire gauze or fabric of suitable pattern. Should it be desired that one part of the picture should show the lines more strongly than another, a part of the object may be shaded or thrown a little out of focus by inclining it more or less to the plane of the picture, or a lens may be employed which focuses part, but not the whole, of the object. By these or similar means, a great variety of effects can be produced on the groundwork. Also the negative of the groundwork can be made of various thicknesses, so as to produce a softening effect in printing.

"The gauze or fabric employed may be of very fine mesh when minute lining is required, or may be of large mesh or magnified when bold lines are desired. Also two or more thicknesses of gauze may be photographed, in which case one, being well focussed, would give definite lines; while the others, being out of focus, would give a shaded effect.

"Instead of wire gauze, natural objects may be employed, in some cases with the aid of the microscope; as, for instance, animal or vegetable tissues, wings or eyes of insects, or such like objects. A dotted effect can also be produced from a pigment held in mechanical suspension in liquid which may either be contained in a glass trough, or spread as a film on glass, so that a negative may be taken from it, which, applied as above described, will give the effect of a stippled engraving. By combining such a negative with that taken from gauze, a combination of the stippled and lined effect will be produced. And thus it will be readily understood that a great variety of effects, such as those of a line engraving, aquatint, mezzotint, or stippled drawing, or a combination of any of these, may be attained by these means, and that these are applicable to ordinary photographs or to enlargements, or to the various preparations ordinarily employed for printing mechanically or otherwise from photographs. The groundwork films produced as above described may be employed in the printing of many successive pictures. When desirable, such a film can be permanently mounted on the negative of a picture, so as to be always printed along with it, and form part of it.

"It may be readily understood that negative films might be used as I have described, not only for producing backgrounds, but also for showing objects superposed with more or less faintness over the objects of the principal picture, and such superposed objects or films containing them may be used in combination with the groundwork."

### YELLOW SPOTS IN PAPER PRINTS.

THE attention recently called by a lady photographer in France to the formation of yellow spots upon prints, and also by M. de Constant in Lausanne, has led Dr. Schnauss of Jena to investigate the matter. It was believed that the defects were due to the use of tobacco in the studios, and the lady in question stated that since smoking had been prohibited in her studio, these spots had ceased to make their appearance. Dr. Schnauss, however, in the *Photographische Archiv*, is of opinion that the defects are due to quite another cause. In his report he says:—"My investigations led me most rapidly to a positive result. As soon as the spots in question were moistened with hydrochloric and nitric acids they immediately disappeared. I hereupon added a drop of a solution of ferrocyanide of potassium, and obtained an intense colouring of Prussian blue, which was most dark around the centre of the spot. Indisputably, therefore, the yellow spots are due to a compound of iron, probably  $\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$ , or a basic sulphate of iron, insoluble in water.

"It is a question where this iron came from. Probably, I should think, it is due to the circumstance that in the photographic laboratory there is always a large quantity of sulphate of iron, or the double sulphide of iron and ammonium, lying about, in the scales, on the tables, &c., and dust or solution has touched the paper. Exposed to the air, sulphate of iron becomes a loose and very powdery compound, which could easily be blown about by a puff of wind, and it would be exceedingly injurious if the pictures were in a wet or damp condition.

"Quite the same phenomenon, but in a more visible

shape, photographers find upon the cuffs and sleeves of their shirts, the well-known iron-mould markings, which are generally to be removed by the application of dilute hydrochloric acid."

### PHOTO-LITHOGRAPHY AND PHOTO-ENGRAVING WITH BITUMEN OF JUDEA.

At the last meeting of the French Photographic Society, M. G. Fortier exhibited to the members a zinc plate upon which a photographic image had been placed, and another plate engraved for typographic purposes, likewise produced from a photograph. He employed bitumen of Judea in the production of these printing blocks, using this material in preference to bichromated gelatine. His remarks upon the subject were as follows:—

"Whatever care is employed in the production of photographic impression by means of gelatine, whatsoever process, I have found that it is impossible to secure delicacy equal to that furnished by bitumen of Judea dissolved in benzole. It is necessary that the film produced should be a thin one, for unless this is the case, it is a most difficult matter to obtain fine lines in the engraving. As a matter of course, a very good negative is always required—one with clear whites and blacks. Intensifying by means of sulphide of potassium is always disposed to cake up the blacks, and to render the lines a little ragged. The best results are obtained with a very clear and tolerably transparent cliché, and not with an opaque negative that has been intensified.

"The bitumen of Judea takes the ink very readily, and resists the action of the acid when you proceed to etch the plate. As far as my experience goes, it is best adapted for the reproduction of all line drawings and engravings."

M. Gobert confirmed M. Fortier in the matter, and said he preferred, also, to use bitumen of Judea. He coated his plate with a very thin film of solution, and, after drying, he exposed and developed with essence of turpentine, the plate being plunged into water as soon as the image comes out clearly; or water might be poured over the plate obliquely, which had the effect of sweeping away the turpentine very completely. In winter time he advocated warming the essence of turpentine a little. The bitumen image, inked immediately after development, absorbs the ink well, and forms a capital basis for printing.

### THE PRACTICAL PRINTER IN AMERICA.

#### II.

IN the comparatively limited amount of photographic literature which has been devoted to silver printing, considerable difference of opinion has prevailed amongst theoretical men as to the best strength of the nitrate bath, the time of floating the paper, the constitution of the bath, and the relative effect of variations in these respects. Amongst practical men probably not much difference of opinion has prevailed, but they, with bright exceptions, unfortunately, but rarely join in the discussion of questions in which their dicta is of the utmost value. A dozen years or more ago, a bath of sixty grains of nitrate of silver to the ounce constituted a common but minimum strength; and variations from that standard up to one hundred grains per ounce were not uncommon, the higher strength being generally recommended as a means of securing vigorous prints. In the energetic discussion on the subject some years ago we took a prominent part in recommending the use of weaker solutions of silver, and of the lighter salting of paper, which should, of course, be a necessary preliminary to the use of the weak silver bath. At one time an albumenizing bath with twenty grains of chloride—commonly the chloride of ammonium—to the ounce was not uncommon; now, probably, not more than from six grains to eight grains to the ounce are generally used, whilst the



average strength of the silver bath in most frequent use is probably about forty grains. Mr. Hearn speaks of thirty grains in summer and forty-eight in winter with a paper he often uses.

To the influence of the time of floating still less attention has been given; but our American practical man deals minutely with it. He observes:—

"It might be supposed that a weak silver bath would necessitate a longer time for floating than a strong bath would, and also that a bath weak in the number of grains of silver to the ounce of water would be more economical. Now this is a mistake. When a sheet of salted albumen paper is floated upon a bath of nitrate of silver, the salt in the albumen will take up the silver which it needs, whether the bath is a strong or a weak one, and chloride of silver will be formed. The albumen will also take up some in the form of albuminate of silver (Vogel's Handbook); and then, if the sheet is allowed to remain on the bath too long a time, there will be more of the solution absorbed than what is really necessary, which will penetrate through the surface and far into the albumen. The paper thus floated and printed will have a sunk-in appearance, owing to the silver discolouring, which is absorbed far into the albumen, as before said, during the lengthened time of sensitizing.

"This sunk-in appearance is not the only fault with long floating on a weak bath; but the albumen will be dissolved off, being left in the bath, and the paper will not print brilliant, but dull; and often flat prints will be the result."

In the next paragraphs Mr. Hearn is somewhat at variance with most authorities; but he is, we think, with certain qualifications, right. An old rule was to float on a strong bath a very short time; but the practice not unfrequently led to irregular and unsatisfactory results, uneven patchy prints being commonly produced. Nevertheless we think the rules which follow are somewhat too absolutely stated, really long floating on a strong bath being, in our experience, a mistake. Mr. Hearn says:—

"A strong bath necessitates a long time of floating, because the albumen on the paper is at first coagulated by the strong silver solution, and it takes quite a number of seconds for the albumen to commence to take up what silver it needs, whereas the albumen on the paper not being coagulated by the silver in a weak bath, it will more readily absorb that silver which is necessary for the production of a good print.

"From this we find:—

"1st. That a strong silver bath requires a long time of floating.

"2nd. That a weak silver bath requires a short time of floating.

"3rd. That a medium silver bath requires a medium time of floating.

"There are, however, bad results obtainable by floating the paper a long time on a strong bath, as well as floating a short time on a weak bath.

"When we float it a long time on a strong bath it will, when printed, make a bold and brilliant print, but the shadows will be very much bronzed, even when the prints are mounted. When we float the paper a short time on a weak bath, it will not be at all bronzed, but the prints are likely to be weak; and, on the other hand, if we float the paper a long time on this kind of bath, the silver will be, as has been said, sunk-in, or, as it is sometimes expressed, the paper will be 'wooly.'"

That the shadows will be much bronzed with a paper floated long on a strong bath there cannot be a doubt; but the details in the shadows will be buried and lost, and the result will be a heavy, not a brilliant print. Of course the negative will largely determine the result; but we are here speaking of the use of an average good negative of proper intensity. Mr. Blanchard pointed out some years ago that with a somewhat weak negative, full of detail,

but lacking in contrast, the use of a strong bath was ruinous, the detail being buried in one flat, dull, even mass; whilst with a weak bath, clear, brilliant prints could be obtained with such a negative. Mr. Hearn is conscious of the danger of taking his rules too absolutely. He says:—

"I do not mean by the first two remarks made above that the extremes are to be indulged in, for then, in a measure, arise the bad results named, and in the case of the weak bath the abuse of the remark will be more especially a source of failure.

"We cannot, to obtain good results, use a bath weaker than thirty-five grains, or stronger than sixty grains of silver to the ounce of water, with many of the brands of paper which are generally used, while with other brands, thirty grains in summer and sixty to seventy in winter are best.

"For the excellent brand of paper known as the 'Berlin,' I found, with the class of negatives I printed when using that paper, that a medium strong bath (say of forty grains in summer and fifty-five to sixty grains in winter) of nitrate of silver to the ounce of water was best, while with the 'Hovey' brand of paper, a bath of not more than thirty-three, or less than twenty-eight grains of silver to the ounce of water, with twenty-five seconds' floating, was necessary during the summer time; and in the winter, when the negatives are printed on the roof, I have known of a bath of seventy grains of silver alone, and from two to three minutes' floating, to be required to obtain good prints from the very thin negatives that were made.

"A weak bath loses so much after silvering a dozen sheets or so, that it commences to make itself felt, and consequently needs strengthening about all of the time.

"A strong bath loses also, but the silver is not taken up in so large a proportion as it is in the weak bath, and the strong bath can be used for a much longer time, even until there will not be enough solution to sensitize the paper, without giving the printer any trouble whatever.

"The prints will be better in many respects with an average bath than with either of the extremes, as a trial will show to the observant printer.

"All of the solution that is on the paper should be, as much as possible, on the surface of the albumen, to prevent 'wooliness,' and so as to have bold, vigorous prints, which can be easily freed from the nitrate of silver in the washing."

## SQUARE CAMERAS AND SQUARE GLASSES.

BY J. H. B.

SURELY the time has now arrived when the old form of plates and cameras should be abolished, and both should be made square. When the finished picture was produced in the camera, as in the Daguerreotype and glass positive processes, there was some reason for the sensitive plates being of an oblong form; but now no such necessity exists, and it would be far more convenient in practice if the glasses were square. There would be more margin left for stains and flaws; the collodion and other solutions would act more equally over the entire surface; and, above all, whatever the form of the picture intended, it would be unnecessary to alter the position of the plate in the camera, as on a square plate subjects in which the longest sides are vertical or horizontal can be taken with equal facility, the paper positives being ultimately made of the required shape. It is absurd to say a lens covers 10 by 8, 6 by 5, and so on. If it covers 10 or 6 one way, it does the same the other, and a more correct way of describing its powers would be by giving the diameter of the disc it will cover.



## ALBUMEN CHLORO-BROMIDE PROCESS.

BY M. CAREY LEA.\*

It has been objected to the various forms of the emulsion process, that it is inconvenient to be obliged to use the emulsion within a certain limit of hours after it is mixed. If kept beyond that time, inferior results are obtained.

It occurred to me that the new process which I have lately described, and sent a brief sketch of to the last meeting of the Photographic Society—that in which the plate is plunged direct into a bath of albumen, and other agents, as soon as set—differed so much in its characteristics from the older processes, that possibly this difficulty as to the keeping of the emulsion might not exist. So far I have been able to make but a single experiment in this direction, but the result was very curious and satisfactory.

Having on one occasion a small quantity of emulsion over, after coating a batch of plates, I set it aside, and subsequently coated a plate with it. Nineteen days had elapsed between the mixing of the emulsion and the coating of this plate with it. It lay aside for about two weeks, and was then exposed and developed. I enclose a print from this negative. The print does not do justice to the negative, which requires deeper printing, but at this moment I have not a really good print at hand. It will serve to show, however, that the negative is an excellent one.

Of course a principle cannot be established upon a single trial. That the first (and only) trial made should be a complete success, certainly argues very favourably, and it seems highly probable that in the case of my new process, the emulsion without any special preparation can be kept for a considerable time without prejudice to the result.

The emulsion was made as follows:—

Cadmium bromide (dry)...	...	6½ grs. to oz.
Ammonium bromide ...	...	1½ " "
Cobalt chloride ...	...	1 " "
Potassium nitrite ...	...	1 " "
Aqua regia ...	...	2 drops to oz.

Sensitized with silver nitrate, twenty-five grains to the ounce. Preservative bath, gallic acid with tannin and albumen as already described. This plate was as sensitive as those made with freshly prepared emulsion. It was tested against one, and found to be in no respect inferior.

## BATHS, ETC.

BY W. H. POTTER.†

HAVING cut loose from portrait photography, and launched into landscape photography, I commenced my operations this season in a campaign against the two Virginias. Of course I have done considerable out-door work, which led me to take this step; but heretofore it has been for recreation and personal pleasure, with a fair portrait business to back me. Now it will be, to a certain degree, a question of bread and butter, combined with the charms of nature—not a very happy combination, but certain to exist in some form.

As to my baths, I make three large ones: two iodized almost up to that point where it ceases to be a virtue, and the other left plain; but all as pure as ice-water, sunning, decanting, and filtering can make them. The bath-tub is filled about two-thirds full. Whenever the bath gives signs of the presence of too much iodide, give it a small dose of the plain bath, not too much. The bath works best very near the turning-point or excess of iodide. The plain solution also decreases the quantity of alcohol and ether to the amount of solution. You can keep on adding, from time to time, plain solution till you get your tub full, and it saves a great deal of time when Dame Nature is

balmy, sunny, beautiful, and calmly submits to that tide of success which, "taken at the flood," brings forth such negatives that make your heart throb for more room. Also, the plain solution is ready for re-developing solutions for instantaneous negatives, &c.

Never take the iodide out of your bath. It is only a waste of silver, profitable to no one but the refiner. As long as you keep or bring your bath up to the original quantity and strength, you will not have pinholes from too much iodide. Prove it by purifying or freeing your bath of alcohol, ether, and dirt, and by adding silver and water, and bring it up to the original quantity. If eighty-ounce solution at forty grains is reduced by dirty plates to sixty-ounce solution, you may expect pinholes. Reduce your vital force from eighty degrees to sixty by letting off your blood, and I presume you would feel funny too. You eat three meals a day, and you should at least give your bath a supper.

Another tight-top bath is used to clear up negatives. Solar negatives should be fixed immediately to secure all the delicacy possible. By fixing and varnishing good negatives on the spot, you shall not have cause to regret afterwards that you possess so much common sense. Those gentlemen who rush through the country making fifteen or twenty negatives a day, must retire sooner or later before the men who make three or four faultless ones. The demand now is not quantity but quality. Landscape photography is behindhand in prices, and something more, is in the mud. But there is a place of honour and profit for it, as well as the one already reached by portrait photography.

Another tub is filled with acid. After you have selected two of the best, not passable, negatives of any one subject, rub off the film of the rest, put them in the acid a moment and wash them, and, if time is not precious, albumenize. By keeping your plates out of the dirt, cleaning off, and using the acid, &c., they are always ready to be used over and over without risk, and in the long run you save time; for what is more mortifying, when the light, &c., is just right, than to find that you have exposed a dirty plate?

Make at least two good negatives of the same subject. If it is not worth two negatives, don't make one, as there is no fortune or fame in it. Aim high: you will come far enough short then; and if so, where will the indifferent or "Tinkering Jim" appear? The crown is for that man who patiently toils till he reaches the top of the ladder. What is the comet or meteor compared with the constancy of the sun? Resolve, if God gives you life and health, that you will reach the high prize you have fixed your eyes upon. Do not take into consideration failure and disappointment; they are only your drillmasters. They are only mistakes to be rectified by experience.

In my next, the four kinds of collodion used in my operations, the developer, and what I saw on the Kanawha, &c., will receive attention.

## Correspondence.

## PORTABLE SCREENS IN PORTRAITURE.

DEAR SIR,—We have been pleased to see to-day your leader in the PHOTOGRAPHIC NEWS on "the use of portable screens in portraiture," as it is a subject to which we think sufficient attention has not been paid by the bulk of the profession in this country, which is the more astonishing when we see what beautiful effects in lighting are obtainable by their use. But to show you that some of our leading photographers are not behind their American brethren in these matters, we may add that we have supplied several of these very useful appliances during the last fifteen months, and we are indebted to Mr. Vandyke, of the eminent firm of Vandyke and Brown, Liverpool, for the first suggestion. We made the first screen for that firm,

\* Read at the June meeting of the Photographic Society of Philadelphia.  
† Philadelphia Photographer.



and we have had the pleasure of seeing its exquisite results in the productions from their studio, where it is in constant use. The form of our screen differs slightly from that described by you, in its being *circular* instead of oblong. Mr. Vandyke (whose opinion we value as of the highest) assured us that the *circular* is the best and proper form of making such screens.

We first make a wooden framework, upon which we stretch canvas on both sides; one side we paint a dead white, the other a dark salmon colour; we make it easily and quickly reversible by means of a horizontal bar fitted with slot and screw, and at the centre, attached by a short wooden arm to a ball and socket joint, held fast in any position by means of a set screw. Thus the screen can be placed at any given angle in a moment, and firmly fitted there. The wooden arm is extended the necessary length beyond the ball and socket, and fixed to an iron rod, which is fitted into an ordinary headrest stand with set screw, so that the whole can be raised or lowered to any required position.

It is very simple and cheap in construction, and handy in use. It is invaluable for a studio lighted only on one side, or where a large amount of top light is introduced, for by using the white side of reflector the heavy downward shadows are completely under control, and rendered soft and transparent. When (in accordance with your remarks) a shirt front, or other folds in linen, or in a white dress, are to be portrayed, it is the simplest matter in the world to give them their full effect by using the dark-painted side of the screen, which effectually subdues the glare of light reflected from such objects, and, instead of a white chalky patch upon the figure, we produce a beautiful semi-transparent effect, giving the minutest detail in every fold of the costume.

We enclose you a photograph (such as it is) showing a back view of our reflecting screen, and if you think it worthy of further reference or description in the News, we shall be happy to place it at your disposal. And with the assurance of our esteem and regard, we are, dear sir, very faithfully yours,

D. H. CUSSENS AND CO.

54, Houghton Street, Southport.

[We shall have pleasure in publishing a detailed description of the screen in question.—Ed.]

#### IMPROVING THE STATUS OF PHOTOGRAPHY-- A PHOTOGRAPHIC UNION.

DEAR SIR,—It was with much pleasure I read and studied, in the PHOTOGRAPHIC NEWS of 10th June, the suggestions put forward by Mr. Hooper for generally raising the status of our art throughout the United Kingdom. I have long felt that a want of united action and interest has prevailed, and I feel confident that were it possible to draw together the entire strength of the various societies to an agreed centre, and organize the whole something after the manner of the British Association, that a great point would be gained. Although London will always be the chief city, yet there will be increased interest in the art, both by the public and the profession, should it be arranged to hold, periodically, an exhibition and conference in different towns, after the fashion so popular and successful in the United States.

I feel, sir, photographers have themselves to blame for being held in an inferior position by the general public. It is well known that, in the present day, people are estimated a good deal according to the estimate they have of themselves; and photographers, as a class, in this country, are far too modest and retiring. Let them blow their own trumpet a little, and plenty will gather round their standard. Why is it the English public so universally speak more favourably of Continental photographs than of anything produced by their own countrymen? Is not the fault somewhat our own? The light is generally accused with the deficiency; but why admit the fact as a fact? I

always make a point of contradicting such a statement, by telling such connoisseurs that this country stands second to none in the art, and has carried off more prizes than any other, both for invention and perfection of work. I trust I am correct in such statements; but if I err, I would rather err in favour of my own country.

I am not, as yet, a member of the Photographic Society of Great Britain; but should such a scheme as suggested by Mr. Hooper be carried into effect, I should be proud of becoming a member, and trust you, Mr. Editor, as a vice-president of this society, will do your utmost to further this desirable scheme. There certainly should be but one representative journal, and not, as now, two conflicting interests. Why should not any member of any society have sent him, free, a journal containing all the papers and doings of all the societies in the United Kingdom? This, alone, would be a great desideratum.

However, I must not trespass on your valuable space, except to thank Mr. Hooper for boldly putting forth this scheme, and trust it may have the serious consideration of the executive of all the societies of the United Kingdom, and be acted upon without delay.—Yours truly, MINIMUS.

*Fine Art Studio, Cheltenham.*

#### BEER FOR DRY PLATES.

SIR,—In reference to your correspondent's query respecting the best kind of beer to use for the dry process, I can recommend with confidence the ale known as Disher's two guinea ale; it is very rich in saccharine matter, and free from acidity. I have used it both for negatives and transparencies with great success. If the plates are to be used within a few days, the final washing may be dispensed with; and they are then very sensitive, the exposure for portraits with a 6-inch focus lens, 2½ diameter (full aperture), being fifteen seconds in the open air on a bright summer's day. With alkaline developer (which I have never tried) doubtless good results could be obtained with much shorter exposure.

With regard to my plates generally, I believe there is one circumstance affecting their sensitiveness that is frequently lost sight of, viz., the hygrometric condition of the plate at the moment of exposure; of course this circumstance is not under the control of the photographer, but it may serve to explain some of the discrepancies observed in working the same process under apparently equal conditions.—I am, sir, your obedient servant, G. RAMSAY.

#### THE NEW SYSTEM OF COMBINATION PRINTING.

DEAR SIR,—In answer to Mr. Gregson's letter in the NEWS, I must say that his plan is far from my own invention of photo-combination, as he goes back to the registration marks, and my system does not require any; and there is too much time and trouble about his for it to be equal to my own, without saying a word in comparison of results produced by his and mine, as photographers will be able to see the simplicity of it when my specification is published.—Yours respectfully, W. TILLEY.

#### Proceedings of Societies.

##### EDINBURGH PHOTOGRAPHIC SOCIETY.

THE annual trade holiday and excursion, under the auspices of this society, occurred on Thursday last, the 30th ult., when nearly every photographic establishment in the city was closed. The excursion on this occasion was arranged for Amisfield Park, near Haddington, to which place the party, about eighty in number, proceeded per rail, starting at 9.50, and arriving a little before eleven o'clock.

Amisfield Park, the property of Lord Elcho, lies about a mile east of Haddington, and is probably one of the most delightful places for picnic purposes within a radius of fifty miles of the city, consisting, as it does, of a practically unlimited extent of



level, fresh, velvety turf, intersected by the Tyne, and beautifully shaded by fine old trees, the interlacing branches of which screened off the hot sun, and formed, in many glorious places, cathedral-like spaces illuminated by the "dim religious light" so refreshing as havens of refuge from the scorching heat of a July day.

Through the kindness of Mr. Ramsay, the tenant at present in possession of the estate, the well-preserved waters of the Tyne were thrown open to those of the party whose tastes lay in the direction of the rod and line, and very shortly after their arrival, several artificial flies were skimming over the surface of the stream; but, so far as we could learn, the trout declined to rise.

The landlord of the "George" Hotel, who was purveyor for the occasion, had spread the tables under a few of the largest trees, and at twelve o'clock the luncheon signal was given, when, by way of fortifying themselves for the labour of the day, full justice was done to what he had provided. After luncheon the assembly was photographed by Mr. Campbell, and then it broke up into parties of twos and larger numbers, and enjoyed a stroll through the grounds, until the strains of welcome music brought back most of the younger, and some of those who were young only in spirit, to the enjoyment of the dance, which was kept up with unflinching zeal till dinner time. For those who did not care for dancing, several games had been provided, and so all went merry as a marriage-bell till dinner was announced, when what might be called the heavy business of the day commenced.

Mr. THOMAS KNOX, J.P., who, along with his lady, had honoured the company by his presence, was, in the unavoidable absence of the president, enthusiastically called to the chair; and Mr. Colin Sinclair, the honorary secretary, acted as croupier. The dinner arrangements, which reflected much credit on Mr. Stevenson, the purveyor, were eminently satisfactory, and so thoroughly successful; and as soon as the rattle of knives and forks had somewhat subsided, the chairman rose, and said that he knew they were all anxious to be again up and doing, and therefore he would not detain them with long speeches. There were, however, three toasts which they could not leave the table without honouring. The first, as loyal subjects of the best and most loved of queens, was of course the Queen herself, which he knew would be responded to right loyally. After the toast was duly honoured, the National Anthem was sung in a way which can only be attained under similar circumstances. The next toast, he said, was of course the toast of the day—"Prosperity to the Edinburgh Photographic Society." Although he had now been for a number of years a member of the society, his numerous engagements, both public and private, had hitherto prevented his joining the members in their annual excursion; but on this occasion, when he received the billet, he found that he was free for the day, and at once resolved to come, and he was heartily glad that he had done so. The sight before him was one not easily to be forgotten. He did not envy the man who could look unmoved on such a large number of happy faces—faces made happy by the innocent enjoyment of healthful exercise and happy association under heaven's glorious canopy, and amidst Nature's most beautiful works. To him such a scene was a noble teacher, exalting the conceptions and purifying the heart, bringing home more and more into loving harmony with human nature, and so into closer communion with its great Author. He thought the committee had counselled wisely in recommending Haddington as the locality of the excursion. This Haddington was really classic ground, in the highest sense of the term—in the sense that it had produced many men who had made their mark in the world, and of whom any country might well be proud. He would not detain them by going over a list of those men, but he could not sit down without mentioning one, the greatest of living Scotchmen, Thomas Carlyle, the "Chelsea Prophet," perhaps the noblest thinker and most powerful writer of this or any other age. It is yet fresh in our minds that while he was with us in Scotland, getting all the honours that it was possible for us to bestow, the hand of death was, in the mysterious dispensations of Providence, permitted to strike down her who had been long his stay and helpmate, and cast a shadow on his noble life never to be altogether removed. "Those of you," he continued, "who, on your way to the Park, made a passing visit to the Cathedral, as you stood beside the grave of that loved one, and read the simple but touching inscription which tells almost a life's history in a few words, must have felt it difficult to restrain the tears, which, under such circumstances, come unbidden, but hardly unwelcome, to the eyes of all whose hearts are in sympathetic union with their fellowmen. Those present who are not members of the Photographic Society owe a deep debt of gratitude to that body for the opportunity, thus afforded, of enjoying at least one glorious day in the year; and on

the other hand, we who are members feel hardly less indebted to the many friends, especially the many fair friends, who have so welcomingly joined us, and given that nameless something to the trip which goes so far to ensure success. Let us, then, unite our voices in three ringing cheers of well-wishing for continued prosperity to the Edinburgh Photographic Society."

When the enthusiasm had somewhat subsided, at the request of the company the chairman sang "Scotland yet," and then said that there was just one other toast that they must not forget—the health of their two secretaries, Mr. Colin Sinclair and Dr. John Nicol. Who they were, and what they had done for the society, were (amongst the members, at least) household words, and therefore he did not need to say anything in commendation. The success of societies generally, and the success of excursions especially, depended almost entirely on the secretaries, and the success of to-day, as well as all our previous successes, tell, in unmistakable language, that they are the right men in the right places.

When the toast had been duly honoured, Dr. Nicol said, in reply, that although the offices of secretary and corresponding secretary were by no means sinecures, the salaries attached were more than sufficient reward. To have a hand, and a tolerably large hand too, in the management of a society of nearly three hundred members, which had for nearly fifteen years done its fair share of good work, and in which, from first to last, there had never been a jarring word, or even trifling misunderstanding, between any of its members, was, he humbly thought, something to be proud of; and when he looked down the tables at the happy party in the fullest enjoyment of their annual holiday, he was sure he could speak for Mr. Sinclair, as well as for himself, when he said that such a sight would amply reward them for any labour that they could possibly undertake.

Mr. SMALL then proposed the toast of "The Ladies," which was humorously responded to by Mr. DOBIE, and the party then returned to enjoy the dance or game, as suited their fancy.

Shortly before seven o'clock, the signal for assembling was given, and the glee party of Messrs. Ross and Pringle's establishment, of whose merits we have frequently had occasion to speak, favoured the company with some really fine concerted and solo pieces, after which three cheers were given to Mr. Ramsay, through whose liberality access to the grounds had been obtained, and the homeward march was commenced. The party left Haddington at 7.30, and arrived in Edinburgh an hour thereafter, highly delighted with the day's proceedings.

## Talk in the Studio.

ANOTHER METHOD OF SAVING SILVER WASTES.—The peculiarity of this plan is, it saves all the silver. Procure a water-tight tray, with cover, say three feet by five or six, and about six inches deep. Fill it nearly full with sawdust; place it on the roof, or where the sun can shine upon it in the open air; let the washings be thrown upon the sawdust, and assist the evaporation by occasionally turning or moving about with a stick. The sawdust can at any time be burned, and all the silver recovered. The larger the surface, the more readily evaporation is effected.—*Philadelphia Photographer.*

IMPERMEABLE PAPER AND CARDBOARD.—According to Dingler's *Polytechnisches Journal*, if a sheet of paper be immersed in an ammoniacal solution of copper (liqueur de schweitzer), prepared by treating copper filings with ammonia of 0.880 density, in contact with air, the paper becomes entirely impervious to water, and maintains its consistency even under the influence of boiling water. When two sheets of paper thus prepared are passed together through rollers, they adhere completely to each other; and by placing a number of such sheets together, board of great solidity is obtained, which may be still further strengthened by the interposition of fibres or tissues between the sheets. Boards thus formed are quite equal to wood in solidity.

ARTISTIC PHOTOGRAPHY.—Mr. C. D. Mosher, in the *Philadelphia Photographer*, asks:—"Why should we not excel?" and proceeds: "Science and art in photography have attained to that high appreciation of real merit and truthfulness of the likeness that places photography to-day as one of the fine arts, which has been brought about by years of hard study. The old style of photograph had no real art merit in it. The photographer just plumped his patron down in his chair in a full blaze of light, many times as stiff and ungainly as the marble statuary



before the artist hand had given it life; and so it was with photography. Science and art have perfected it, more complete more truthful, than any artist hand can draw by art rules in painting and drawing. The artistic photographer has light and shade, roundness, the true symmetry of artistic proportions, grace, ease, and natural pose, and life-like expression that is not excelled. To-day the artistic photographer can give his patrons likenesses from life, and the beautiful landscape in every form, true to nature, almost perfection itself, with not as much as one hair added to or taken from."

**EBONY FROM SEA-WEED.**—An American periodical gives a process for making artificial ebony from sea-weed. It consists in first treating the plants for two hours with dilute sulphuric acid, then drying and grinding them up. To sixty parts of this product, five parts of liquid glue, five parts of gutta-percha, and two and a-half parts of india-rubber are to be added, the latter two being first dissolved in naphtha. Afterwards ten parts of coal tar, five parts of pulverised sulphur, and five parts of pulverised resin are added, and the whole heated to about 300° Fah. When cooled, a mass is obtained which, in colour, hardness, and capacity for receiving a polish, resembles ebony, and is much cheaper. A process for obtaining a product of this sort from sea-weed was patented some years ago in this country by Mr. T. G. Ghislin, but there was never much commercial result therefrom.

**A CAPITAL ADHESIVE LIQUID**, for sticking tickets on glass, wood, or paper, is obtained as follows:—About half an ounce of common glue, which has been a day before soaked in water, and some candy sugar, with half an ounce of gum arabicum, and three ounces of water, are placed in a small bowl over a spirit lamp, and continually stirred till the composition thoroughly boils and dissolves, and the mass becomes thin. When coated with a small brush, and left to dry, the tickets, when moistened with the tongue, will stick with the greatest tenacity.

## To Correspondents.

**ASHBURTON.**—The term "whole-plate" describes a plate of 8½ inches by 6½ inches. The term had its origin in the days of Daguerreotype. The half-plate was 6½ inches by 4½ inches; the third size was 5 inches by 4 inches; the quarter-plate 4½ inches by 3½ inches; the sixth size 3½ inches by 2½ inches; the ninth size was 2½ inches by 2 inches. These were all the usual sizes of which Daguerreotypes were taken. Extra sizes—such as 10 inches by 8 inches, 12 inches by 10 inches, &c.—were occasionally produced, but had no regular recognition.

**R. S. T.**—The reticulation is doubtless due to the collodion, and is probably due to the use of too weak solvents; that is, there is too much water present, the spirits having been insufficiently highly rectified. We regret that we cannot recommend any maker's collodion; but should think the plain negative collodion of most makers would serve. You may make a suitable collodion by following the formula given during several years in our YEAR-BOOK; but it is a troublesome process on a small scale. For use as a practical basis for the negative in place of glass you would require to use a much thicker collodion. The preparation of collodion which Mr. Woodbury and others have more than once described in the NEWS and YEAR-BOOK as leather collodion, having castor oil added to it, is best suited for the work. The examples you send are much too thin. Failing the use of the leather collodion, gelatine, in the manner we have often described, might be used for the transfer. A negative transferred to gelatine or collodion should be of the thickness of a piece of firm writing paper. If you get a fine sample of graphito it should be as fine and impalpable as it is possible almost for any pigment to be; but where it can be procured we cannot tell you.

**F. H., A CONSTANT SUBSCRIBER.**—There is no reason why an English photographer should not photograph the public buildings in Paris. Indeed, the best instantaneous street views of Paris we have seen were produced by an Englishman, Mr. Wm. England. 2. We fear that there are not many very special opportunities for a country visitor to see anything important or novel in photography in London. He may visit the International Exhibition, and see a few fine examples of photography in the photographic department there; and he will see many fine pictures in the picture galleries. He may see something by visiting the specimen rooms of some of the leading photographers, and he should pay a visit to the National Gallery in Trafalgar Square, and also the National Portrait Gallery.

**G. COOPER.**—There will be no medals given at the next exhibition. None of the conditions as to reception of pictures have been published yet, nor, so far as we know, even determined.

**FERE.**—We believe that Mr. Meagher, of Southampton Row, manufactures the combination printing frames.

**W. H. W.**—We cannot understand the matter at all. It is inexplicable. You do not send a copy of the original letter to which the angry reply is sent.

**IONORAMUS.**—Your first requisite in producing transparencies by the wet process will be a suitable copying camera. If you have access to our volume for 1871 you will find it described in an article on page 449, and many other details there given. A useful article on the subject also appears in our YEAR-BOOK for 1868. If you cannot refer to these, we may here briefly indicate the style of thing required. You will require a camera extending to double the focal length of the lens to be used; that is, if you use an ordinary quarter-plate lens, which has a focus of 6½ inches, your camera must extend 13 inches. You will also require a box of the same size as the camera, with each end open; in one end a groove to hold the negative, whilst the other end is placed close to the lens. The light of a north sky must pass through the negative, which must be duly brought into focus. All the working details of the ordinary wet process will serve. Use a developer with ten grains of the iron salt and twenty minims of acetic acid. After fixing and washing, tone with a solution of chloride of gold two grains to the ounce.

**OXONIENSIS.**—For beginning in landscape work, you cannot do better than obtain a bellows-bodied camera and lens to take views of about 7½ inches by 5 or 5½ inches. The lens you mention will do very well. You will be safe with almost any of the commercial collodions. They will answer your purpose much better than attempting to make your own.

**C. A. OWEN.**—No. 3 on your list will answer your purpose best.

**CHARLES WHITING.**—Thanks. In our next.

Several Correspondents in our next.

## METEOROLOGICAL REPORT FOR JULY.

BY WILLIAM HENRY WATSON.

Observations taken at Braystones, near Whitehaven, 36 feet above sea level.

Date.	In shade. Morning.	In Shade. Noon.	Night.	Temp. at Noon in Sun.	Direction of Wind at 9 a.m.	
1	62°	63°	58°	—	S.	Drizzling rain all day
2	66	60	61	—	S.	Drizzling rain a.m. and p.m.
3	63	64	59-6	—	S.	A little rain a.m. and p.m.
4	61	61	59	—	S.S.W.	Rain this evening
5	58	61	58	91	W.	Rain early this morning. Generally sunny
6	62	67	55-8	100	W.N.W.	Fair and sunny
7	64	68	64	110	S.	Fair and sunny. Close and sultry this evening. Distant thunder p.m.
8	66	66	59	—	S.S.E.	Fair. Gloomy. Distant thunder
9	62	68	63	—	S.E.	Fair. Gloomy. Close and sultry
10	66	69	62	112	W.S.W.	Fair and sunny. Sultry
11	61	66	60	—	W.	A little rain at night. Cloudy all day
12	60	72	61	120	—	Fair and sunny
13	64	68	65	—	S.W.	Gloomy all day. Heavy rain at night
14	63-5	70	65	118	W.S.W.	Fair and sunny
15	67	67	61-5	118	S.	Fair and sunny
16	68	78-5	72	121	—	Fair and sunny. Heavy thunder clouds occasionally
17	70	76	65	108	W.S.W.	Fair and sunny
18	72	76	71	119	S.	Fair and sunny
19	72	76	69	118	W.S.W.	Fair and sunny
20	66	70	66	106	S.S.E.	Rain, thunder, and lightning early this morning. Fair and sunny during the day
21	63	68	60	109	W.N.W.	Rain a.m. and p.m.
22	60	68	66	111	W.S.W.	Fair and sunny
23	61	69	63	105	S.	Fair and sunny
24	63	67	64	—	S.	Rain a.m. and p.m.
25	63	69-8	63	99	S.W.	Rain a.m.
26	62	67	62	103	S.	Rain morning and evening. Clear during the day
27	63	66	64	108	S.W.	Rain early this morning. Sunny all day
28	58	64	57-7	105	E.	Sunny during the day. Thunder and lightning, with rain, this morning
29	60	70	63	116	N.N.E.	Fair and sunny
30	62	71	63	118	S.	Fair and sunny
31	63	60	63	—	S.W.	Rain all day. Strong wind this evening

From the above data we deduct the following:—

	Mornings.	Noons.	Nights.
Maximum temperature	...	72°	78-5°
Minimum ditto	...	58	60
Mean ditto	...	65-8	67-7
Maximum temperature in sun	...	...	121-0
Minimum ditto	...	...	91-0
Mean ditto	...	...	110-2
Mean temperature of all determinations in shade	...	...	65-4
Number of days on which rain fell	...	...	15
Number of days on which it was fair	...	...	16
Number of days on which it was fair and sunny	...	...	12
Number of days on which it was fair and gloomy	...	...	4
Prevailing wind	S. and W.S.W.		

Braystones, August 3rd.



## The Photographic News, August 14, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO. PHOTOGRAPHY IN MID AFRICA—HOW TO TEST DRY ALBUMEN—ASTRONOMICAL ENLARGEMENTS.

*Photography in Mid Africa.*—We are glad to hear that the expedition sent out by the Viceroy of Egypt into the interior of Africa, under the command of the well known traveller Gerhardt Rohlfis, is employing photography largely in taking records of the scenes the travellers pass through. Too much importance cannot be given to the camera in exploring expeditions like this, and if we but call to mind the few pictures taken during our own Abyssinian expedition some years ago, the interest of photographs taken in these wild regions is at once made manifest. The wilderness of rocks and torrents, with scarcely a tree the whole distance, was vividly portrayed in the pictures we refer to, and a glance at half-a-dozen of these conveys a more correct idea to the mind of the nature of the country than a whole volume of description could do. The only effective manner, indeed, of showing people at home what these wild regions are like, and to impress them with a true notion of the primeval forests and dismal swamps, gigantic lakes, and native villages of Mid Africa, is to lay before them reproductions of the scenes themselves as they have been secured in the camera. We have already mentioned the fact that Gerhardt Rohlfis is accompanied in his travels on the present occasion by a Berlin photographer of repute, M. Remélé, whose practical investigations, especially in the matter of developers, are known to most of us. He seems to have been working hard with his apparatus, and securing a large number of interesting pictures, which will doubtless be highly prized when they reach home. A letter from a member of the expedition says:—"During our journey through the desert our skilful photographer Remélé took numberless landscape and ethnographical pictures, including a fine series of a fallen temple which is in our neighbourhood. The hieroglyphics upon the portals, which have been carefully rendered, will suffice for Eastern scholars to discover the epoch of its building." Colonel Gordon's military expedition, which is also in Central Africa, charged by the Viceroy with the suppression of slavery, has, we fear, no such valuable assistant on his staff, although apparatus for surveying and mapping have not been forgotten; and it was only last week that further scientific assistance, in the persons of two young Royal Engineer officers, was sent off to Egypt. We cannot but regard it as a great mistake that a camera and some dry plates should not have had a place among the apparatus taken out, so that some interesting records might be secured, alike valuable and interesting to people at home, as to the travellers themselves.

*How to Test Dry Albumen.*—Albumen, and egg albumen especially, is often adulterated with gum, dextrine, syrup, &c.; and although photographers, as a rule, only employ the fresh material by breaking the eggs themselves, and thus being assured of its purity, it may be well for them to know how to test albumen that they may purchase commercially in a dry state. M. Herberger, who has been investigating the subject thoroughly, has lately given his experience of the matter. The sample to be examined should be digested with cold or lukewarm water, and if white lumps are left undissolved on stirring, the substance has been too quickly dried, so that the albumen has been converted into the insoluble modification. Water is added, so that the solution may contain at most twelve per cent. of albumen, and then acetic acid is dropped in until neither precipitate nor turbidity is perceptible; alcohol is then added, and if there happens to be any gum in the albumen it is precipitated. Dextrine and analogous bodies are detected by the production of a blue colour with iodine solution. Egg albumen, if good, should be

transparent, of a pale yellow tint, and free from blisters, which are often present in partially coagulated samples.

*Astronomical Enlargements.*—Professor C. V. Zenger, of Prague, has written to Mr. Glaisher to propose a method of enlarging solar and lunar photographs, so as to correct the spherical aberration, and he gives some advice on the forthcoming transit of Venus operations. He thinks it will be perfectly useless to photograph the phenomenon at the moment of contact, because accuracy is entirely destroyed by the effect of the interference, and thinks it would be better to have the passage photographed at intervals, so as to ascertain exactly the moment at which Venus passes through a determined meridian on the sun's surface. Prof. Zenger has been successful in producing some very big astronomical enlargements, and thinks that one might obtain a magnified image of the transit of Venus measuring 200 to 250 inches. In some lunar enlargements, measuring eighty to one hundred and ten inches, which he will exhibit at the British Association meeting that will take place next week, there are to be seen many details unobservable by the naked eye. Slight shadows and ridges in the craters of the moon are rendered as sharp and as definite as they can be seen in the clearest and driest winter evenings with the most powerful telescope. Some moon pictures which were originally three inches in diameter, and were enlarged by Mr. Brothers, of Manchester, to eleven inches, have been amplified by Professor Zenger to 110 inches, gaining rather than losing definition. His method of enlarging to these grand dimensions is as follows. He gets, in the first instance, very sharp images by using a parabolic speculum, the rest of the spherical aberration being destroyed by a very fine aplanatic lens of Steinheil, with negative focal length. In this way solar images with spots on them were obtained of the greatest sharpness, with faculae, willow leaves, and a most sharply-defined gradation of penumbra, the diameter of the sun's image being from twenty to twenty-four inches. He then conceived that the remainder of aberration in the images might be easily destroyed by photographing with lenses whose remainder of error was opposite to that of the photographing speculum or reflector; and he tried the experiment, employing an opera-glass, somewhat over-corrected for the purpose, with great success. At a recent meeting of the Royal Astronomical Society some impressions on paper of Prof. Zenger's enlargements were shown.

### THE PRACTICAL PRINTER IN AMERICA. III.

PROCEEDING to describe the preparation of the printing bath, we find that our practical printer, without discussing theoretical considerations, gives his verdict in favour of the mixed baths first described in our pages some years ago, which were at the time the subject of some warm discussion. Besides adding nitrate of soda, it will be noticed that carbonate of silver is kept in the solution, which will have the double effect of keeping the solution neutral or slightly alkaline, and of removing discolouration of the solution. The term *sal soda*, used in one of the paragraphs which follow, is the American colloquialism for carbonate of soda:—

"In the making of the bath, both good nitrate of silver and water are required. In all cases where pure water is required, filtered rain or clean ice-water will answer.

"To make a bath of 60 ounces of solution, and 40 grains strong of nitrate of silver to the ounce, the number of grains of silver required would be 2,400 grains, or 5 ounces. Take a large, wide-mouth bottle, and add 60 ounces of pure water thereto. Now carefully weigh out 5 ounces of good nitrate of silver and add it to the water in the bottle. Dissolve thoroughly by repeated shakings of the contents of the bottle, which is very easily done, without spilling the liquid, by holding the top of the bottle firmly



with the left hand, and revolving the bottom in a circular motion, in a steady and even manner, with the right.

"This bath is called 'plain nitrate of silver bath,' because of its being composed simply of nitrate of silver and water.

"This bath is used by a great many excellent photographers throughout the country, except that the strength of it differs, sometimes being greater, and then again often less than the strength given above.

"Mr. H. T. Anthony, of New York, was the first to advise the use of alum in the printing bath, and since the discovery of it for that purpose it has become quite universally used. It is, indeed, the best thing that can be added to the bath to give brilliancy and richness of tone to the prints. The theory of the alum, as being an improvement when used in the printing bath, is as follows:—The alum hardens the surface of the albumen paper when it is floated upon a silver bath containing it, so that the solution is kept more on the surface, and when the paper is quickly dried the resulting prints appear very brilliant, printing finely, especially in the shadows, and are more easily and better toned and fixed, and the final washing is more likely to be thoroughly done. A small lump of alum is placed in the funnel through which the bath is filtered, and the solution, as it filters, will take up the quantity it needs.

"Mr. John R. Clemons has recommended the use of glycerine in the printing bath, in the proportion of  $\frac{1}{2}$  ounces of pure glycerine to every 16 ounces of solution. It has been used most successfully by many photographers, and it is especially a good thing for his brand of paper, when it is floated for the space of one minute on a bath of 30 grains (during the summer time) of nitrate of silver to the ounce of water.

"Sal soda is often added to the silver bath in the proportion of an ounce of a saturated solution of the soda to a bath of 60 ounces. On adding this, the bath will immediately turn milky, and after the solution has been thoroughly stirred it should be allowed to settle for awhile, and then filtered into another bottle before use, leaving the carbonate of silver (the deposit) in the first bottle. When through silvering the paper, pour the solution back into the bottle where the deposit is, and again shake the contents. In the morning the solution will be thoroughly clear, although the bath may have been very much discoloured when it was poured into the bottle the night before.

"Always let a sediment be in the bottle, and every other day add a few drops of the soda solution to the bath. Keep on 'adding solution' made up as above. A few ounces of the solution should be added to the printing bath every night after use, so as to keep the quantity up to a certain number of ounces.

"I have used a bath prepared as above for eight months, and although the bath, when poured from the silvering dish at night, was often as black as a coal, it never failed to be clear in the morning, if there was a sediment on the bottom of the bottle.

"Citric acid is also sometimes added to the printing bath, in a greater or less degree, according to the time the paper is required to be kept, for this is principally the reason why the acid is added.

"When the paper is only required to be kept a day or so after sensitizing, so as to prevent it from turning yellow by being kept over-night, on account of a sudden storm, &c., the solution is made a very little acid, viz., a few drops of a solution of citric acid 20 grains, water 1 ounce. If the paper is desired to be kept white for a longer time than a couple of days, then more of the acid should be added. Fume fifteen minutes. The paper will print a little red, but it will most probably be very rich, although this will be according to the quality of the negatives, &c.

"The 'citric acid printing bath' should be tested every morning before using it, to ascertain the degree of acidity.

Never let your bath be acid with nitric acid unless it is very, very slightly so, as the prints, besides being of a poor (photographically considered) red colour, are very liable to be weak and flat.

"Nitrate of ammonia is very often added to the printing bath in the proportion of as many grains of the nitrate to the ounce of water as there may have been grains of nitrate of silver added. After adding the nitrate of ammonia to the printing bath, make slightly alkaline with liq. ammonia.

"Sunning the bath for about half an hour or so after the nitrate of ammonia has been added, and the solution made alkaline, is a good plan. Filter before use. I will here give a few formulæ for baths for printing, which I have used, and know to be excellent:—

No. 1.—Crystal nitrate of silver ...	40 grains
Nitrate of ammonia...	35 "
Filtered rain water ...	1 ounce
Saturated solution bicarbonate of soda, about ...	8 to 10 drops,

or enough to make the bath slightly alkaline. In place of the sodium, liq. ammonia can be used equally as well. Make up a sufficient quantity, and before filtering through cotton, place a lump of alum in the funnel, about quarter the size of an ordinary butternut.

"The above bath is for summer use; in the winter both the nitrates should be increased.

No. 2.—Nitrate of silver ...	2½ ounces
Nitrate of soda ...	2 "
Glycerine ...	3 "
Pure water...	40 "

Make it a little alkaline with aqua ammonia. This bath is very good indeed for the Clemons brand of paper, and can be used also with the Hovey brand; but a bath made as below is better for this particular paper, viz., the Hovey:—

No. 3.—Nitrate of silver ...	30 grains
Nitrate of ammonia...	30 "
Pure water ...	1 ounce.

Make it a little alkaline with aqua ammonia, and when about to filter the solution place a small lump of common alum in the funnel, or, if you prefer, add a grain of the alum to every ounce of the solution. The latter is probably the best. The alum, if added in this way, should be added before the bath is filtered.

"Float the paper, being sure that it is a little damp beforehand, from twenty to thirty seconds; draw over a rod, and blot off the superfluous quantity of silver that is still on the paper, between large sheets of white bibulous paper. Dry quickly and thoroughly, and fume ten minutes.

"The above formulæ and modes of working are for summer use, but for winter the temperature of the solution should not be below 50°, and the strength of the nitrates should be increased as well as the time of floating. Print, in the winter, in the printing room under glass, and keep the temperature of the room not below 50° or above 60°.

"There are some photographers who prefer an acid printing bath to an alkaline or a neutral one, because the resulting prints are red, and the red tone is more easily obtained (?), so they say.

"If the bath is acid with nitric acid the result will not be so fine as it would be if it was acid with citric acid, because, if the bath was any more than very slightly acid with the nitric, the paper floated upon it when printed will have, as above said, a disagreeable red tone to it, often being weak and flat. The best results are obtainable with a bath which is either a trifle alkaline or just neutral. A good way to regulate the alkalinity of the printing bath is to observe how the paper prints, and then act accordingly. If it prints too blue, a drop or so of nitric acid should be added to the bath; if it prints too red, then add a few drops of liquor ammonia. In testing this way,



however, the printer should be sure that the paper is properly fumed, and that the results are not occasioned by poor judgment in fuming. Place a piece of blue litmus paper into the solution before you commence to 'doctor' the bath, and note the exact colour it turns.

"Nitric acid should always be added to the printing bath when it is not desired to make the solution acid for the purpose of printing, but only to lessen the alkalinity of the bath."

### AMERICAN CORRESPONDENCE.

#### THE NATIONAL PHOTOGRAPHIC ASSOCIATION AND ITS CONVENTION IN CHICAGO.

*The National Photographic Association and its Convention in Chicago.*—The convention and exhibition of the National Photographic Association for the year 1874, being the sixth of that useful institution, is now among the things of the past. All things considered, it was a grand success, and much good will result from it. I give you a synopsis of all that transpired, without waiting for details. The Association will issue a full report presently only to subscribers.

I arrived upon the scene several days before the opening, and found the photographic fraternity of Chicago all absorbed in their preparations for the great event. Local Secretary Hesler was busy superintending the erection of "space" for the exhibition of the pictures and of merchandise, and the decoration of the splendid exhibition halls. His assistants were busy receiving cases of goods in great numbers from all directions, and the scene was a most animated one.

I visited several galleries, and found the work of preparation going on with like vigour. The stockdealers, too, were vying with each other to see who could make the best appearance, in order to attract the photographers. This pleasant spirit was kept up during the whole week, as I can testify from pleasant personal experience.

Tuesday, the eventful day for the opening of the Convention, arrived, and promptly at ten a.m. President Bogardus sounded the gavel, and proceeded with the business of the association. After the address of welcome by Local Secretary Hesler, and the response of the president, routine business was taken up. The report of the executive committee was an interesting one, as it gave the doings of that body between conventions, and made several important suggestions, one being with regard to the election of officers, and the other concerning the failure of the members to pay their dues, and the consequent debt of the association. The treasurer reported the association \$3,556 in debt. His accounts were referred to an auditing committee, and reported correct. As recommended by the executive committee, preparations were now made for the election of officers. Messrs. Landy, Hall, Knight, Southworth, and Fitzgibbon were appointed as a committee to make nominations, to report at the afternoon session. They were instructed to report a multiplicity of candidates for each office.

Tuesday afternoon was devoted mainly to discussions on photographic practice, Mr. E. M. Collins taking the lead on the "Causes of the Discolouration of Prints." He was followed by Messrs. Bowditch on "Lighting and Retouching," Lockwood on "Making Good Pictures," Rulofson on "How to Push Business," Webster on "Manipulation," Loomis on the "Dignity of Photography," Hough on "Art Education," &c. The remarks and addresses were all models of terseness and practical usefulness.

The report of the nominating committee followed. Tellers and judges were then appointed for the election fixed for the evening session, and the tellers were instructed to prepare tickets and distribute them. All this preparation was made, instead of the election being held as heretofore, in order to prevent the insinuations so prevalent that the elections were not conducted fairly.

Mr. Bogardus peremptorily declined serving another

year as president. Mr. Bell made an address eulogizing Mr. Bogardus for his faithful service in behalf of the association, and in favour of Mr. Rulofson for president. The session closed about six p.m., and as the members dispersed, for the first time they learned of the dreadful fire which had been raging near by for over two hours. The smoke was flying in dense clouds over the exposition building, and caused great consternation all around. Great fear was entertained that the sixth exhibition of the National Photographic Association was doomed, and that before long the thousands of beautiful photographs displayed would be in ashes. Certainly no fashionable assemblage gathered there as was expected to see them, and all any of us could do was to watch and wait. Now the wind would drive the flames over us in fearful sheets, and following a rain of sparks and burning wood. At midnight it was thought best to remove many of the goods, and several exhibitors, desiring to be on the safe side, took the precaution to place their pictures, &c., out of danger.

In the morning we were delighted to find the building unharmed. The goods removed were replaced, and in a few days the exhibition halls looked as bright and beautiful as on the day before. But the fire had broken the spirit of enthusiasm, and there was a general anxiety to get away. However, those who did not flee the city, gathered together in the morning, and business was proceeded with as usual. But the backbone of the convention and exhibition was broken.

Wednesday morning the first order of business was the reading of the report of the committee on the progress of photography. This was followed by the appointment of a committee to fix the location for the next convention, and then Mr. W. H. Rulofson made a stirring appeal to the convention to remove the debt then, there, and now. He was followed by others, and it was resolved to take up the matter on the morrow. Other routine business followed. In the afternoon, Mr. D. H. Cross, the skilful operator for Mr. C. D. Mosher, of Chicago, and a gentleman well known by his inventions, made an address on general photographic practice, and he was followed by Mr. C. E. Meyers, in an essay on photographic screens, which was elaborately illustrated by models. Minor practical discussions were entered into, and then Mr. John R. Clemons gave one of his inimitable "talks" on photography in general, and some branches of it in particular. He then answered the catechizing of the members until time for adjournment. The day was intensely hot, and was a fair test of the earnest desire of the visiting photographers for knowledge pertaining to their work.

The evening was devoted to the election. The polls were open from seven p.m. to nine p.m., the tellers and judges being promptly at their posts. The votes were deposited rapidly, only a few attempting to vote without first paying their dues. All such attempts were foiled by Treasurer Moore, whose very impressive appearance reminded the gentlemen of their first duty before voting. For the first time in its existence, the National Photographic Association held its election by ballot. The result was nearly the same as heretofore, and it is hoped that all croakings about "unfairness," "manipulation," &c., will for ever cease, and that all good members will accept and support the officers who have been elected. The result of the election was as follows:—

*President*—William H. Rulofson.

*Permanent Secretary*—Edward L. Wilson.

*Treasurer*—Albert Moore.

*Executive Committee*—W. Irving Adams, A. Bogardus, A. Hesler, V. W. Wilcox, I. B. Webster, J. W. Black, W. H. Rhoads.

*Committee on Progress of Photography*—A. S. Southworth, W. H. Sherman, J. Landy, A. Gardner, Dr. H. Vogel, G. Wharton Simpson, M.A.

And one *Vice-president* from each state and territory.

Thursday morning President Bogardus occupied the



chair, and received the report of the tellers. He then made his closing address, and welcomed his successor to the chair amid great applause. Mr. Rulofson made an address which won the whole convention over to him, and we could see by the faces of those present that they meant to support him. He will prove a most worthy incumbent of the office, which, he said, he considered "next in honour to that of the presidency of the United States."

Mr. Loomis offered resolutions eulogizing and thanking President Bogardus for his service. The permanent secretary and treasurer elect being called upon, each made a brief address.

To Mr. W. W. Gillis, Rochester, N. Y., was awarded the gold medal for the best display of frames; and to Messrs. Robinson and Cherill, of England, the gold medal for the best display of photographs from England.

Mr. Bell now moved that the subject of the debt of the association be taken up, and made an address on the subject. He was followed by others, when time for adjournment arrived. President Rulofson said the debt would be made the order of business for the first half hour of the afternoon session.

Mr. Clemons, chairman of the Scovill and Holmes Medal Committee, reported that the committee had awarded the Scovill (gold) medal to Mr. W. G. Entrekin, Manayunk, Pa., for his oscillating enameller; and the Holmes (silver) medal to Mr. L. V. Moulton, Beaver Dam, Wis., for his improved photo washer. Adjourned.

As announced, the first half hour of the afternoon session was devoted to the debt question. President Rulofson made a strong appeal for its removal, and others spoke on the same score. Many contributions then flowed in; a large demand was made for tickets in the "mammoth offer" enterprise, and about twenty were made life members, the whole amounting to nearly a thousand dollars. For a first effort this was very handsome. Mr. Bowdish gave two of his camera stands, which were quickly purchased; Messrs. Anthony and Co. gave a large camera box and stand, and there were several other gifts, which brought out the crowning one from Mr. Rulofson, of all the elegant pictures which he had on exhibition, and which, he announced, he would sell to the highest bidder in the evening. The permanent secretary, not knowing what Mr. Rulofson's auction sales would amount to, agreed to give one dollar more towards the debt, on a risk. One thing was most convincing, and it was worth more than all the money to see it, namely, that the members of the National Photographic Association value it, appreciate and see the good it is doing, and are determined it shall not fall. We congratulate them on their wisdom.

The committee on location for 1875 reported in favour of Boston, with Mr. J. W. Black for local secretary. Mr. Black was present, and made graceful acknowledgment, the usual promises, &c.

Mr. J. H. Tomkins, Grand Rapids, Mich., addressed the convention at length upon the status of the sliding-box patent, and was followed by Messrs. Southworth, Bell, &c.

A very pleasant feature of this session was the presentation to President Bogardus of a handsome solid silver pitcher and pair of goblets, as a token of their regard, by a committee of members of the association. Mr. Bogardus received it in his usually graceful style.

Friday morning, the first thing taken up was the reading of Mr. S. Lockwood's carefully prepared report on a Life Insurance League, and the formation of a Photographic Fire Insurance Company. These interesting matters deserve the attention of all photographers, and we recommend their careful reading. Both matters were referred to a new committee, to report next year.

Benjamin Freuch, Esq., made an address on the "debt," and was loudly applauded. Further effort was now made to remove the debt, and amid much enthusiasm the scene of yesterday was repeated, until the Permanent Secretary announced that enough tickets had been taken for the

mammoth prize to enable the drawing to go on. Mrs. Lockwood and Messrs. Mosher and Slee were appointed to prepare for the drawing. More subscriptions were then received, and the articles given yesterday were sold to the highest bidders. The Permanent Secretary reported that President Rulofson's auction last evening netted \$224, and therefore he had to acknowledge himself involved to the amount of \$225 towards liquidating the debt. This being the case, the whole amount now paid and promised was sufficient to wipe out the debt. Tremendous applause, and three cheers proposed by Mr. Bell. Happiness reigned, and the drawing for the mammoth prize followed. In one hat tickets bearing the numbers of the tickets sold were put, and in another hat blanks in equal number were placed, on one of which was marked the word "Prize." Two children then drew a blank and a numbered card simultaneously, under the charge of the committee. As drawn, the numbers were announced to the Convention, and for nearly half an hour continued, before Mrs. Lockwood said "423" — "Prize." The Permanent Secretary referred to his list, and announced that Mr. W. H. Jacoby was the owner of "423," and therefore the prize was his.

A committee was appointed to intercede with the Post Office Department, for better regulations for the mailing of photographs.

All routine business was now finished up, and President Rulofson bade farewell to the Convention.

Friday afternoon was occupied in practical discussions, vice-president Colonel H. D. Marks, of Texas, presiding. Addresses were made by Messrs. Collins, Elliot, French, Winsor, Husher, Libby, Hall, Webster, C. W. Hearn (author of the "Practical Printer"), Southworth, and others, when the convention adjourned to meet in Boston, July, 1875.

Thus closed one of the most eventful conventions ever held by any body, and the National Photographic Association left Chicago stronger than ever before.

The exhibition proper was a magnificent one, embracing nearly all classes of pictures from very many countries. As you will see, Messrs. Robinson and Cherrill carried away another medal. I wish some of your photographers would make the competition sharper for them.

EDWARD L. WILSON.

## THE MOON'S FIGURE AS OBTAINED IN THE STEREOSCOPE.

BY CHAS. J. WISTER.

[In the following remarks in the *Journal of the Franklin Institute*, Mr. Wister illustrates the distortion too common in stereoscopic views taken with the lenses too far apart, when an effect of exaggerated relief is sought.—ED.]

In a paper published some time since, in the *Cornhill Magazine*, and republished, September last, in the *Living Age*, entitled "News from the Moon," a singular argument, and to my mind a singularly fallacious one, is put forth in confirmation of the figure of the moon as deduced from the calculations of the continental astronomer, Gussew, of Wilna. This article referred to is without signature, but, as the author alludes to his correspondence with Sir John Herschel, he no doubt speaks *ex cathedra*.

The figure of the moon should be, as proved by Newton, an ellipsoid, her shortest diameter being her polar one, her longest diameter that turned towards the earth, and her third diameter lying nearly east and west, a diameter intermediate to the other two. Newton further found that her shortest diameter would not differ more than sixty-two yards from her longest—an insignificant difference, surely, in a body whose mean diameter is about twenty-one hundred miles.

Gussew, however, comes in at this point with an assertion based upon measurements of De la Rue's photographic copies of the moon at the extremes of her librations; and upon ocular demonstration derived from viewing



these different perspectives of the moon's image combined by the aid of the stereoscope, undertakes to subvert his great predecessor's theory, and to substitute one of his own, founded on this very unreliable testimony. He asserts not only that the moon is egg-shaped, its smaller end being turned earthward, but that the point of this colossal egg rises seventy miles above the mean level of its surface. Now it is to the proof of this as derived from stereoscopic evidence that I take exception for reasons hereinafter set forth.

The stereoscopic views of the moon are, as already stated, taken in the opposite stages of her librations, in order to obtain greater differences of perspective than would be obtained if taken in the ordinary way, where the separation of the two pictures corresponds with the average distance between the eyes of adults—four and a half inches; for this, it is evident, would give no more spheroidal appearance when viewed through stereoscopic glasses than is obtained by viewing her by unassisted vision, in which cases she appears as a disk only, and not as a sphere. With the same object—that of increasing the stereoscopic illusion (for illusion only it is)—it is not uncommon for photographers, when taking stereoscopic views of distant scenery, to avail themselves of the same means—that of unnaturally increasing the base of operations—and thus effecting a much greater apparent separation of the various planes of distance than really exists. The effect of this is to distort the picture painfully, advancing the middle distance boldly into the foreground—similar points being combined by the stereoscope much nearer the eyes than if the pictures had been taken in the normal way—whilst the foreground is seen so near, that one feels it in his power almost to reach it with his hand. Another and more objectionable feature of this exaggerated perspective effect is that all near objects are dwarfed; men become pigmies; imposing mansions are reduced to baby-houses, and lofty trees become insignificant bushes—the reason being that these objects, though seen at points much nearer the eye, subtend, nevertheless, the same visual angles as those seen at more distant points—points corresponding with their true position in the landscape—for the photographic representations of them are no larger, and therefore appearing nearer, and yet subtending no greater visual angles, the impression upon the mind is that of smaller objects. Every one, I think, who has viewed stereoscopic pictures of distant objects, combining middle distance and foreground, must have witnessed this distortion.

Now let us apply this principle of optics to De la Rue's exaggerated stereoscopic perspectives of the moon, and what is the result?

Sir William Herschel says, in illustration of the effect of stereoscopically combining images of our satellite taken at opposite stages of her librations, "it appears just as a giant might see it, the interval between whose eyes is equal to the distance between the place where the earth stood when one view was taken, and the place to which it would have been removed (the moon being regarded as fixed) to get the other." Now this would all be very well, provided the picture produced were for the use of giants formed after the pattern proposed; for they would see the stereoscopic image under exactly the same circumstances that they would see the moon herself in the natural way with their widely separated organs—no greater change being required in the direction of the optic axes in combining similar points of the two perspectives than is required in viewing corresponding points of the moon's surface by unassisted vision; but when these exaggerated perspectives are presented in a stereoscope to finite beings like ourselves the effect is magical indeed. Then do near points of the moon protrude in a most alarming manner, threatening to punch us in the eyes, the whole presenting the appearance of an unusually elongated turkey's egg. Neither the modest sixty-two yards of the immortal Newton, nor the more pretentious seventy miles of

Gussew, would satisfy her claims now: nothing, indeed, less than several thousand miles would represent the difference between her longest and shortest diameters thus distorted.

Indeed, for a pretty scientific toy, with which De la Rue has supplied us, this distortion of the moon's image is of little moment. The curious are, no doubt, more pleased with it than if it appeared in its true proportions—for figures generally are more admired the less nearly they conform to nature's lines—but that men of science, even great men, should accept this delusive and distorted image as a basis for serious investigation of the figure of our satellite, conscious of the manner in which pictures producing this image are taken—and, though forewarned, should not be forearmed—passeth my understanding. It is but another instance of the too great avidity with which world renowned philosophers seize upon the most unreliable evidence from which to draw conclusions most important to science, thus shaking the faith of those who have hitherto looked upon them as infallible.

### PRINTING IN THE DARK.

REFERRING to the incredulity expressed at the French Photographic Society as to the continuance of the action of light upon isolated bichromated films, Mr. H. Baden Pritchard writes as follows to the *Moniteur de la Photographie*:—"I have read with some surprise your recent remarks upon the matter of carbon printing. 'Printing in the dark' is, with us, so common a practice that I was of opinion that the continuance of the action of light upon a film of bichromated gelatine, after it has been exposed to the action of the sun, was an accepted fact. It is the custom here, in the Woolwich Photographic Establishment, when a large number of impressions are required in a hurry, to only half print the pictures, and to preserve them in the dark for twenty or four-and-twenty hours before development, and then the printing is found to be complete. It is not a simple experiment, therefore, but a practical method by which we have produced a great number of prints.

"When M. Gobert did me the honour to pay a visit to Woolwich I showed him several specimens of the process. I exhibited to him, also, two prints which had been exposed half the proper time in the sun, one of which had been developed at once, and the other preserved many hours before development. The first was very pale, the second very vigorous. I believe that M. Gobert was satisfied in the matter, otherwise I should have been pleased to have demonstrated the fact experimentally.

"I have made a large number of experiments with isolated films, and have kept them for a long time in a moist atmosphere, and dry in vacuum; I found that when preserved in a desiccated state under the bell-jar of an air pump, the solar action progressed far more rapidly than in the presence of moisture.

"The reason why this mode of printing does not always succeed appears to me very clear: it is no doubt in the nature of the film itself, which has not, perhaps, body enough. In fact, one often hears unsuccessful operators say that if the impression is kept for some time, in lieu of gaining vigour, the whole mass of pigmented material becomes insoluble. The tissue employed in the War Department is supplied by the Autotype Company, and this may be preserved in winter time for a week or ten days in the same condition of sensitiveness. It is only in very hot weather, unfortunately, like the present, that it becomes insoluble after two or three days.

"If an impression preserved for some time during cool weather becomes insoluble, this proves conclusively that the solar action really does continue, or that the pigmented mixture has not been properly prepared.

"When the weather grows colder again, I should be happy to send you some samples of tissue to experiment with."



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## PHOTOGRAPHIC PUZZLES: SHOULD THEY BE DISCUSSED MORE?

IN what manner may photographers generally best acquire all the secrets in their art? This is a question which should interest every one; but most of all that large section of photographers residing in provincial towns, away from photographic societies and from opportunities of personal examination of other work than their own. It should also interest even the most accomplished photographer with the best metropolitan opportunities of investigation. For despite the wonderful progress which the art has made, there are many secrets yet to be discovered, many riddles to be solved in connection with the art. Besides the many theoretical questions yet to be settled, there are many of a directly practical character which concern the working operations of every photographer, and which have hitherto been discussed in such desultory and fragmentary manner that no satisfactory or definite conclusion has been attained. Can exposures be shortened by the use of energetic developers in the wet process without risk of fog? Can the same result be secured by modifications of collodion or nitrate bath? What is the cause—or, rather, what are all the causes—of minute yellow spots in prints? What is the cause of pinholes when a perfectly new bath is used? What is the cause of streaky, irregular markings at one end of the plate in certain states of the collodion and bath? Is there a positive advantage in fuming sensitive paper with ammonia? These and a score of other questions have not yet been absolutely determined: the final word has not been said in relation to any of them.

These are, then, unsettled questions, worthy of discussion, which have not received the attention they deserve. Most of them have been discussed in some sort, but generally in a fragmentary and desultory manner. A frequent occasion of complaint is made by some photographers, of whom we may mention an example in a correspondent signing "Senex" in the present issue, to the effect that the practice of free intercommunication which was the main source of rapid progress in the art years ago, is dying out; that photographers are becoming more reticent and less liberal, keeping for their own purposes, or vending for a price, with conditions of secrecy, any especially valuable method they may discover. That the fact is so there can be little doubt; and it is, perhaps, not unnatural. In the early days of photography it was essentially an art-science, chiefly pursued by enthusiastic amateurs; and they delighted to interchange ideas with each other, giving and receiving aid, as scientific men and members of

purely scientific societies usually do. They had no thought of either keeping back or selling their experiences. As a rule, the ablest men, and those occupying the highest positions in the art, still communicate freely their modes of working, as our pages and society meetings attest. But photography has undergone various phases of change: whilst at one time the amateurs far outnumbered the professional photographers, now portraitists alone far exceed the number of amateurs devoted to the art. Photography has become a trade as well as an art-science. Improved methods possess a money value, and when preserved secret, or known to a limited number, give, or are supposed to give, to the initiated a commercial advantage over their less informed competitors. It is possible, doubtless, to say something in defence of the retention for profit, or sale for money, of secrets which have cost time and money; nevertheless, the practice is, fortunately, not common. It is certainly not elevating to the individual or the art. It is scarcely possible to secure a high art status for a profession which is supposed to depend much for success upon vendable secret dodges, rather than on the personal skill and culture of the artist.

But we cannot but think that the tendency to reticency and maintenance of secrets is often exaggerated. Many subjects are less discussed now, perhaps, than they used to be, from a certain supineness or indifference begotten of success. The ordinary processes of photography have attained such an even level of successful practice that it is for the most part not difficult to shunt many of the difficulties which cannot be overcome, and the busy professional photographer, who should be most interested in many of the questions to which we have referred, is content to let moderately well alone, and let doubtful matters "slide." Amateur photographers in this day are more deeply interested in dry processes, emulsions, &c.; and these are more actively discussed. But the great defect in much of the discussion of matters photographic, alike amongst professional and amateur workers, is a want of a systematic and exhaustive method. The full statement of experience on any one subject by many minds, each giving a clear and full statement of individual knowledge, would be invaluable on many subjects. In a recent communication Mr. Bovey very clearly pointed out an admirable method which might be adopted with the most beneficial results. We will here re-state his proposal for the purpose of emphatically endorsing it. Referring to the fertility of resource which usually distinguishes the skilled photographer, he says:—"What the result, then, if we culled such experiences in pages that should be devoted to the publication of puzzling conundrums, by the managing director, say by preference, of the NEWS? The problems to be stated somewhat thus: 'I have a negative with sky, by artificial means, so softly stopped out, that outlines of picture have nothing of scissors to show. How was the masking accomplished?' Brown knows all about the plan, and states how he has done it; Jones has been equally successful, although, in comparing methods, he works quite another way; Robinson has essayed to secure such results in many a trial, and burns to learn the secrets that lead to success; whilst all interested in the matter would enjoy opportunities of selecting for themselves the easiest; and ideas thus sown in fresh soil would propagate improvement, most certainly. Then failures might be introduced with a view of culling concealed principles from an examination of the proffered remedies. Fog, stains, stars, comets, together with those etceteras so familiar among photographers' woes, might be introduced in turn, and something new would be obtained from each subject under examination." We heartily commend such a course of giving and receiving all possible light upon many subjects of interest to all our experimental readers, and promise every aid we can offer towards rendering such discussions pleasant and profitable.



## THE NATIONAL PHOTOGRAPHIC ASSOCIATION IN AMERICA.

THE sixth annual convention of the National Photographic Association of the United States was held in Chicago, the meetings commencing on Tuesday, July 14th, and continuing all the week. A copious summary of the proceedings will be found in the letter of our American Correspondent; but there are one or two points worthy of comment which will especially interest many of our readers, especially those who believe that by the formation of some national union of photographers the status of the art and its devotees would be elevated, and their interests promoted. The proceedings of this convention certainly tend to confirm such ideas. The meetings were held under the shadow of a great calamity in the city. During the afternoon of the first day of the convention the second awful fire broke out in Chicago, and raged for many hours sufficiently near the neighbourhood of the meeting room to render the removal of goods and pictures from the exhibition desirable. They were replaced next day; but, as our correspondent states, the anxiety and alarm of the fire effectually crushed out all enthusiasm from the members, and spread a pall of gloom over all their proceedings. In spite of this, it is impossible not to be struck with the tone of staunchness to the association which prevailed, and the co-operative brotherhood which seems to have been engendered. It appears that the activity of the association had outstripped its means, and it was desirable that a debt should be cleared off. On the first appeal a sum of a thousand dollars was raised by contributions in cash and kind, and by some members compounding for life membership; and a second subscription reached a still higher sum, and enabled the executive to "wipe off the debt." One photographer, Mr. Rulofson, presented a fine collection of pictures which he had at the exhibition, which, being sold by auction to members, realized the sum of two hundred and twenty-four dollars; and the permanent secretary of the association, our esteemed correspondent, Mr. Wilson, having, before this action took place, pledged himself to give one dollar more than any sum which might be realized by it, at once announced his readiness to contribute two hundred and twenty-five dollars towards liquidating the debt. We mention this one instance as illustrating the spirit of liberality and earnestness which is at once cause and outcome of such conventions of men, with common aims and interests, which may be promoted by concerted action and interchange of thought.

The papers appear to have been interesting and instructive, and the exhibition a capital one. Messrs. Robinson and Cherrill taking the gold medal for the best display of photographs from England. It would be an interesting thing, by the way, if, in their next distribution of medals, the Photographic Society of Great Britain offered a medal for the best display of pictures from an American or foreign contributor.

### LAMBERT-TYPE.

THIS process, which is patented in France, and which, for some time past, has been offered for sale among photographers, our esteemed correspondent M. Lacan having recently referred to it and the effective results produced by its aid, has just been published in all its details by Dr. Liesegang, in the *Photographisches Archiv*. It is a method of producing enlargements, and the secret of the affair is, after all, a very simple one, consisting, indeed, in a plan of retouching which, in the finished picture, seems very elaborate, but which, nevertheless, may be carried out in a very brief period.

The enlarging is done by means of the carbon process, and although Dr. Liesegang enters into the matter at great length, there is little need for us to go through the details circumstantially. From the negative of small dimensions is produced a carbon positive, printed upon

pigmented tissue, which is developed on a good piece of patent plate glass. The strength of the positive, viewed by transmitted light, is deceptive, and therefore it is recommended that the impression be viewed with a sheet of white paper underneath it. This positive upon glass is put into an ordinary enlarging camera, and a piece of ground glass (polished side towards the cliché), and, if need be, a condenser, employed in front to condense the light and break it up again; or, as in Paris, a dark room suitably fitted up may be employed instead of the copying camera.

The large negative is then taken in the ordinary way upon a sheet of patent plate, and developed with iron, and fixed. But very little intensifying should take place, because in the retouching process sufficient vigour will be imparted to the cliché. The latter is finished in the ordinary manner, varnished, &c., and then taken into the retouching room to undergo the secret process which imparts to it the artistic excellence possessed by the Lambert-type prints. Like all other processes that depend upon retouching, it would seem as if the operator must be something of an artist in order to secure effective and agreeable results within the short space of half an hour.

The secret, then, is briefly as follows:—On each side of the negative is pasted a sheet of French vegetable paper. This is exceedingly clear and transparent, and it is sold in the capital under the name of *Papier Végétal*. It must not be confounded with ordinary transparent papers, which are not fine enough for the purpose. A sheet of this vegetable paper, then, is coated at the borders with paste or glue, and placed over the collodion image, and another sheet of similar size is applied to the glass, or reverse side, of the negative. The paper must of course lie flat against the glass, and for this reason it is well to moisten the same slightly before it is applied. On drying, it will then stretch out perfectly flat.

The retouching is conducted by applying upon the paper upon the glass side of the photograph, powdered chalk or graphite, by means of a leather or paper stump, covering with it the large transparent patches and broad lights. Upon the collodion side of the negative the face markings are equalized by the aid of a brush and Indian ink, and high lights are touched in where they appear necessary. No fine working is necessary in the matter, for the double filtrations of the light through the vegetable paper give so much softness, that in a short time the same effect is produced as if the negative had been carefully and artistically retouched throughout.

The large negative is finally put into an ordinary printing frame, and an albumenized impression taken in the ordinary way.

Dr. Liesegang states that the process has been purchased by many houses in Germany, and many of the results he has seen show that much finer results can be produced than by the methods of intensifying usually adopted by photographers.

### THE PRESENT UNSATISFACTORY STATUS HELD BY PHOTOGRAPHY.

BY W. BOVEY.

To fill the highest possible place in the world's estimation is an object which cannot be too eagerly sought after by honourable ambition; and he who has no recognized status to boast of might write himself down neglected indeed if his character, and the intellectual nature of his daily pursuits, are in strict unison with a somewhat indefinite respectability that, in its general make up, includes morality, skill, deportment, gold, silver, silks, woven wool, and spun flax, to meet the varying demands of society, whose tastes must be flattered with show to over-reach prejudices that run in separate grooves.

For several years past, photographers have had ample cause to complain on account of its social position, as unsatisfactorily viewed by outsiders, and numerous have



been the suggestions provided to teach how the coveted appreciation might be secured; and although each, from all others, in substance would appear widely to differ, the directions, when analysed, all tend to show that a strict observance of self-respect is the surest road to take when seeking the good opinion of others.

Without a cause there can follow no effect; and in obedience to this axiom, there must exist some reason for the social degradation of which photographers so bitterly complain. Nor need we indulge in vague speculation over this matter, as a brief notice of facts undeniably suggests that cheapness and what the world believes to be *ease of production*, have influenced public opinion to a certain degree, but have not, perhaps, lowered the status of photographers to its present humiliating position; such being, probably, in part due to peripatetic photographers whose studio is the road-side, whose patrons are chance passers-by, or the recent out-put of licensed houses, who, out for a lark, make it part of the day's sport to have their likeness taken. At fairs, races, watering-places—in a word, where crowds do congregate for purposes of pleasure—there is seen the ubiquitous photographer, varying in his outward appearance from a repeat of Bill Sykes the bold burglar, to a woe-begone swell out of luck; and it is to be feared that the public too often form their estimate of photography from an observance of these whining louts and lusty shouters, who do not scruple to make all claims they safely can on those who make themselves patrons; and however the errors thus entertained might be deplored, we may not cast a stone in anger at the innocent delinquents, they holding secure possession of an undoubted right to fill any vacant place in the scramble for the means of subsistence, without any necessity of considering the damage their pursuits inflict on the character of others, who, unhappily, have no means at hand to convince the world that there exists as broad a gulf which separates a cultured art photographer—an immeasurable distance from the road-side quasi practitioner—as is placed between a Millais or a Frith and the all but extinct manufacturers of pencilled profiles that are drawn, coloured, and delivered all for the sum of sixpence and moderately upwards.

The world, be it duly noted, rarely indulges in any but superficial reasoning, and its judgments are based on hastily glanced over premises; hence it equalizes the status of photography, simply because photographers have no distinctive sign to show that the skill required to make a good photograph has been acquired by much practice, patient study, and an application of those higher mental qualities that stamp a mind with the mark of intelligence. The chemist is but a mixer of drugs, if his sign-board does not make known that he is a qualified member of the pharmaceutical corporate body. A surgeon is but a setter of bones—a practitioner of midwifery—if, perchance, he neglects to add “M.R.C.S.” to his name plate. “M.A.” is a useful adjunct to the divinity of divines. And “F.R.S.” are letters most eagerly longed for by every man of science. Depend upon it there is associated with initialled marks of honour a mysterious degree of fascination, which induces an elevation of status that the world freely grants without making any enquiries.

For some unaccountable reason, photographers, whilst mourning over their unrecognized position, have overlooked their interests in this matter of corporate distinction. True, the proposal to found a corporate head has been mooted again and again; but it would appear that all argument has been quashed by the thought, “we have a parent society,” which, by the way, has done us good service; but membership is too freely offered to make such a subject of boasting. We need something more distinctive and broadly separate; some institution where membership would be regarded as the highest seat of honour, whose certificates might be accepted by the outside world as a certain proof of extraordinary skill and intelligence possessed by each legitimate holder. R.A. sets the status of

the princes of the artistic world on an unchallenged throne; F.R.P.S. would doubtless set photography on its proper and merited footing.

But apart from the question of status, of which the general public form the chiefest part, photographers have yet to see the necessity of adding to their desire of notice some respect for themselves; have yet to learn that status cannot be raised by internal jealousies and squabbling. Glance over the field as it now presents itself to every regretful observer. Men without natural powers of inventing aught but scurrilous words are abusing those who, in their day, have done our art good service. Our journals, of which we were once so proud, give, at least in more than one instance, signs of sharing in the growing degradation; and a contemporary, once respected for its advocacy of our art-science, has plunged into the mire of miserable lampooning, which has not even second-rate wit to excuse or recommend it.

If this unwise departure from the legitimate track is received favourably by photographers, of what use can it be to mourn an absence of status such as they can have no possible claim to? If the tone of journalism to which I have just referred is one that chords with any widespread sympathy, then must I reluctantly conclude that the world grants all the consideration we can reasonably expect or deserve. I would not, however, libel the practitioners of our art by adventuring on such a thought. We have black sheep among us—many, doubtless—but there still remain a majority whose aims are on the side of respectability and progress. The improvement of status we therefore ask as our due; and although this will scarce be tendered “at call,” there still remains to us the pleasurable consolation that what we at present lose of respect from outsiders will in future be paid up with interest, if meanwhile we keep steadily before us those lessons of duty we owe to ourselves and to those who generously map out new tracks on the boundless field of invention.

## A WORD ON DEVELOPMENT.

BY WILLIAM HENRY WATSON.

Of the many operations in photography, from the coating of the cleaned plate with collodion to the finishing of the paper positive, none gives so much interest to the manipulator as the development; and in the still more numerous phases under which chemical actions manifest themselves there is not one so wonderful, so perfect, or so interesting as the simple development of a photographic picture. Yea, simple. The plate removed from the camera bears a film one uniform mass, without a mark or a shadow; and yet, by the one application of the developer, we see before us a picture, a truthful representation of the original. But to insure *all* perfection, something more is certainly required than a mechanical operation regardless of all thought. There is a certain amount of judgment necessary, according to the nature of the subject, and, further, the chemicals all in proper order. In this communication to your valuable periodical I wish to place before your readers an easy method of preparing the developer which, for wet plates, I am now adopting.

I have no doubt that others as well as myself have found considerable difficulty in keeping a large quantity of the iron developer ready prepared, in its proper condition, and in good working order. As has been before suggested, I use strong solutions of protosulphate and acid. My proportions for this are as follows:—

No. 1.—Ferrous-sulphate	...	...	120 grains
Sulphuric acid	...	...	2 or 3 drops!
Water	...	...	1 ounce
No. 2.—Citric acid	...	...	300 grains
Water	...	...	500 „
No. 3.—Alcohol sp. gr.	...	...	0.80 graius



The solutions, if not quite clear, should be carefully filtered; by so doing we save considerable time after.

To prepare two ounces of developer, I simply have to measure out 120 gr. measures ( $\frac{1}{4}$ -ounce) of No. 1 and about a drachm of No. 2, a drop or two of No. 3, and add water to make up the two ounces. By using such concentrated solutions (1) we at one blow do away with the inconvenience of frequently having to use the scales and weights; (2) the developer is made in half a minute, while it would take at least five minutes if we used the weights; (3) I have found it to work well only five minutes after mixing; (4) this developer is clear, and requires no further filtration; (5) we can use it stronger or weaker, as the subject may require.

Supposing I wish to take a ramble out with my traps into the fields: I mix, before starting, into a half-ounce bottle or less, 120 gr. measures of No. 1 and 60 of No. 2. By so doing I have also less weight to carry, and anything taken into consideration in that line is always economy. To make a drachm of developer the same strength as that given above, take about 10½ to 11 minims of the mixed solutions of iron and citric acid.

This developer brings the image out slowly, and finally we have a great deal of detail.

Whilst engaged on the analysis of some samples of iron ore, I found that a solution of ferrous tartarate is sensitive to the photo-actinic rays. I have floated bibulous and other papers on a solution of it, and exposed under negatives, and have distinctly seen the faint images printed on the paper. The action, so far as I have seen, is very slight, yet I should not wonder if some valuable matters connected with photography are some day brought out in the use of this salt. The solution of ferrous tartarate I prepared by precipitating from the ferrous sulphate by ammoniac carbonate, ferrous carbonate, and dissolving in the absence of the actinic rays by an excess of tartaric acid. This solution will of course contain ammoniac sulphate. I made it equal to about 20 grains of the tartarate to an ounce of water.

## CORRECTING PHOTOGRAPHIC DISTORTION IN ARCHITECTURE.

BY CHARLES WHITING.

HAVING recently to copy a number of Daguerreotypes of architectural subjects, in which the perpendicular lines were leaning to at the top (in some cases very badly), it became necessary to correct this very unsightly distortion. The means employed to effect this object may not be generally known, and an account of which may, perhaps, be useful to some of my brother photographers; therefore I send it for insertion in the pages of the PHOTOGRAPHIC NEWS.

I found that by placing the Daguerreotype to be copied out of the parallel with the lens-board—or, in other words, putting the narrow end of the picture nearest to the lens—the distortion effected, to some extent, corrected the previous distortion; but not enough, and I could not get the picture sharp all over.

The lens I found best was one of Ross's wide angle doublets, which has great depth of focus and also great distorting powers (if I may be allowed to use the expression), which, in this case, proved very beneficial. But for all this I could not quite correct the distortion until I thought of a swing-back. The ordinary swing-back cameras have not sufficient "swing" for the purpose, so I set to work to construct one. My copying camera has a movable repeating back; this back I made to work on points at the bottom, or, in effect, "hinged it" in the centre of the top part. I fastened, by means of a few tacks, a thin strip of iron, which projected over the top of the camera, the strip of iron having a series of holes in it. I was enabled, by driving a tack through one or other of these holes into the top of the camera, to produce a swing to

any extent. I fastened a dark cloth over this arrangement to prevent any light getting into the interior of the camera, and the work was done.

I may, perhaps, here observe, that to get the picture sharp all over, I found it necessary to place the swing-back at about the same angle with the lens-board as the Daguerreotype plate is—the Daguerreotype plate, lens-board, and ground glass presenting angles similar to the letter V with a perpendicular line through the centre, thus  $\Lambda$  / .

I find by using my camera as above indicated, I can stretch one end of a square plate to at least half as long again as the opposite end, with the greatest ease, and still have it quite sharp all over.

Having succeeded so far, I thought my trouble at an end; but, unfortunately, another difficulty presented itself, and that is, by correcting the distortion in some of the worst cases the subject became somewhat dwarfed, or shortened in height, but still having the same breadth. The only way I was able to get over this trouble was by making a transparency from the negative I had made previously, and stretching one side in the manner above described, and then making another negative from this transparency, and stretching the other side, so as to bring it square again. This is some little trouble, but, except in very bad cases, it is not necessary, as the dwarfing is hardly perceptible.

In my own experience I found the best way to get rid of reflection from the polished surface of the Daguerreotype was to completely cover the front of the camera with black velvet, having a hole in it for the lens to project through, and to build a tunnel of the same material up to the Daguerreotype, leaving a portion of one side open to admit the rays of the sun to shine through on to the Daguerreotype.

It is very important to place the Daguerreotype in such a position that the polishing marks run in the same direction as the sun's rays. But in the case of circular polishing marks it is better to copy them in diffused daylight.

I trust this brief description may prove of some slight assistance to some of my brother workers.

## Correspondence.

### ALBUMENIZED PAPER.

DEAR SIR,—A firm supplying albumenized paper to the profession has recently issued a circular commencing with a statement that, to my mind, is scarcely accurate, and I think a few words necessary in reply, which, I trust, may prove beneficial both to those who undertake the manufacture of albumenized paper, and to those who have to use the same, as they come from a practical photographer who himself is an old albumenizer, and much regrets that many who now supply paper to the trade should betray such ignorance of the practical manner of treating the paper they sell, and, consequently, issue absurd nonsense to really practical men. The circular I allude to commences thus:—"Of the many things which photographers make use of in their daily work, there is none so little cared for in photographic journals as albumenized paper," &c.

Now, sir, I distinctly and emphatically deny such an allegation; for any one reading the journals representing the art in this country must confess that albumenized paper and albumenizing is a subject continually upon the carpet, and many able articles and useful hints are frequently published. If the manufacturers of the raw paper, and, especially, the albumenizers themselves, as well as the vendors of the article, read the journals more than they evidently do, they would not publish and circulate such remarks as are continually being sent round to practical men.

An albumenizing firm get a medal for their paper at an



exhibition, and naturally publish the fact to all the world; but were the various papers sent practically tested, or did the jurors judge (as the world is far too apt to do) by outward appearances? I would recommend my professional brethren to try the different papers in the market one against another, in the same baths and at the same time, and decide for themselves.

The vendors of albumenized paper certainly seem in an advantageous position—at any rate, we may judge so from the circular before me—for, after laying down a kind of proposition—viz., that albumenized paper may be considered as the “further elaboration of a simple product,” a statement which no one would wish to deny—it goes on to say that “it is to the latter class that the preparation of albumenized paper belongs, for this material is due to the further treatment of a simple product—paper—with albumen; and it is to the circumstance that the finished material always depends upon the quality of the first product employed that so much variation in its nature is due.”

Next follows a long list of grievances with respect to the raw material and its imperfect manufacture, which I shall leave the manufacturers themselves to answer, although I fear they will not think it worth their while; for I am told they are very rich and independent, and care very little what albumenizers, or even photographers, say about their manufactures.

Then follows a charge against photographers, and we find printed in italics these words, “who often charge it with defects which might be overcome by increased attention on their part.” This, of course, is true in some small measure, but it is the poor photographer, as the ultimate purchaser and consumer of the article, who has to suffer. He has to pay for an inferior article, has an immense deal of extra labour in making reprints, disappoints his patrons by unavoidable delays, and probably all because some albumenizing firm, that knows little or nothing of the practical working of the papers, is trying some new fad, instead of working steadily in one groove, thus supplying a regular article. A statement is next made, that “many photographers desire a very glossy surface to their paper,” &c.

Now, sir, doubly albumenized paper, unless done very skillfully, is often a failure, and it is a mistake for albumenizers to attempt second coatings before they have been successful in giving one good even coating, for we next read this remarkable sentence: “Moreover, one cannot very well demand, seeing that there is no other practical method of drying at hand than that of hanging up the prepared sheets, that albumenized paper with a single coating shall yield pictures from the top of the sheet of equal vigour to those printed on the lower portion, upon which there is so much more albumen.” In reply to this, I would say that it is a wrong practice altogether to pin sheets up by the corners to dry, and that albumenized papers might and can easily be made of an even thickness all over, and worked up to the very edge. All that is necessary is, after drawing the sheet from the albumen over a glass rod, or something similar, to lay it immediately upon a wooden roller of a proper thickness to dry. These rollers must not be too small or too large; experience will dictate the size, as the temperature of the room must be taken into consideration. This simple arrangement will get over this insurmountable difficulty on the side of the poor albumenizer, who, because some find fault with his work, feels he must punch away both sides, giving first a right-handed blow to the manufacturers of the raw material, and a left-handed one to the photographer, and thus escapes himself, or thinks he does. I trust, sir, after this article, we may have a circular announcing the abolition of pin corners, and paper evenly coated all over; if so, the writer of this article will feel himself fully rewarded for his friendly criticism.

The rest of the circular I intend leaving, except to state that I think it would be wise if firms supplying albumenized paper would give up issuing all kinds of formulæ, instead

of leaving it entirely to everyone's choice and practical knowledge. It seems to me unwise for a firm (perhaps representing no practical photographers, and scarcely ever, if ever, trying practically the paper they sell) to dictate how such papers are to be treated. Surely it would be best simply to state whether they are strongly or weakly salted, and not to advise photographers to fix highly albumenized paper in a hyposulphite bath of the strength of one to ten, or even one to fourteen, in order to avoid blistering. The remarks as to the silver bath are just as foolish and vague, as well as misleading. Any practical photographer would have given a direct, simple formula, suitable to the paper, and not such latitude as one to ten or one to twenty parts as directions for the strength of the silver bath.

Before concluding, I would ask the question whether some substance cannot be discovered that could be applied to the paper supplied by the manufacturers, so as to completely cover any imperfections in such manufacture, and also such a substance as shall take kindly to the process of albumenizing, so that the latter shall be entirely free from any defects in the former, and thus wipe away for ever this ground of complaint. Will some of our chemical friends inform us, and thus add a new discovery to our already productive art?—Yours truly,

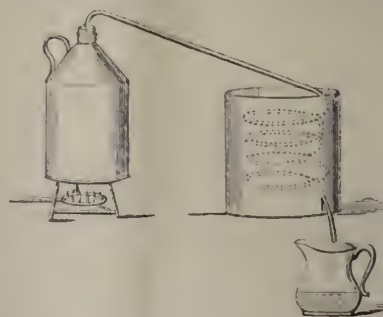
GEORGE HOOPER.

Winwood House, 68, Canonbury Park South, N.

#### A CHEAP STILL.

DEAR SIR,—I beg to send you the particulars of how I made a still, and cost, if you think it worth notice, as I see occasionally in the News questions about stills.

Get a half-gallon tin case, 10d.; large tin saucepan, 1s. 6d.; eight feet copper tube, 2s. 1d.; soft solder, 1d.; total, 4s. 6d. Fill the tube with sand, and ram it tight; bend it in shape round and round can, which is easily



done, as it is very soft; make a hole in saucepan bottom, pass tube through, and solder it tight. Put can on a gas stove, filled with water, make a hole in the cork, and put other end of tube through. Then fill saucepan with water and light up. It will do a pint and a-half an hour. The tube may be purchased at any tinman's ironmonger.—Your obedient servant,

AN AMATEUR.

#### ON THE ASSERTED INFLUENCE OF COLOURING MATTERS UPON SENSITIVE SILVER SALT.

DEAR SIR,—Absence from home has prevented me from replying earlier to Dr. Vogel's communication printed in the News of 31st July. The statements made by the eminent German professor have taken the world by surprise, and are accounted of so much importance that the contemporary press, both in this country and abroad, are proceeding to theorize and draw deductions of a premature nature, founded upon the absolute verity of phenomena observed under very exceptional conditions. That this is the case I have only to refer your readers to the last few lines of the extract from the *Scientific American*, given in the same number of the News, and entitled “Application of Dr. Vogel's Recent Discovery in Photography.”



Dr. Von Monckhoven and Mr. Carey Lea are well able to defend themselves, so I have only to answer the objection which Dr. Vogel raises against my own experiments with coloured glasses. He says:—"Experiments made without the spectrum can never be taken to contradict those undertaken with it, any more than experiments without collodion can be employed in combating collodion investigation." This simile is unfortunate, for Dr. Vogel compares ponderables with imponderables—or, rather, *matters with forces*. Now I contend that it does not signify how the yellow rays are selected or generated for the purpose of experiment—whether by the burning of sodium, which gives out rays of the same degree of refrangibility as those in the neighbourhood of the fixed lines D; or by screening off the superfluous solar rays by the interposition of an orange glass, as I had done, or by actual exposure to a pure solar spectrum.

I have tested by the very instrument used by Dr. Vogel (*spectroscope à vision directe*) the quality of the light transmitted by my orange glasses, and find them to be suitable for the end in view; and I see no reason to doubt the negative character of my results, particularly as they are in accordance with all previous observations. In short, I find it impossible to admit, with Dr. Vogel, "that dry bromide of silver is sensitive to the orange rays;" for, if so, what dark room could we work?

When presiding at the June meeting of the Photographic Society, I took particular notice of the degree of tinting apparent at the edges of Dr. Von Monckhoven's plates then exhibited, and they certainly did not appear to be too strongly coloured. Their clear definition and general excellence as spectrum photographs far exceed those which, through your kindness, I have been permitted to inspect as the work of Dr. Vogel.

In a matter of such paramount importance to photographers, I would venture to suggest that the question at issue be referred to a commission, and amongst British representatives of physical science it would be desirable to invite the aid of Professor Stokes, Mr. Norman Lockyer, or Dr. H. E. Roscoe, whose conclusions, individually or collectively, would carry great weight, and virtually decide the matter at once.—I remain, yours very truly,

Shanklin, Isle of Wight, August 10th. JOHN SPILLER.

#### INTERCHANGE OF EXPERIENCE AMONGST PHOTOGRAPHERS.

SIR,—It is a constant source of regret amongst photographers who remember the birth of the art, to notice the growing tendency to secrecy which prevails amongst the photographic fraternity, or, at least, a large section of it. Time was when the first impulse of the devotee of the science of the sunbeam, when he conceived a new thought, had a new experience, or made a discovery, was to publish it for the benefit of all working in the same direction; and as almost every one did the same, all were benefited. As regards their photographic knowledge, they followed the example of the early Christians with their goods: "they had all things common, neither said any of them that ought of the things that he possessed were his own." Now this is sadly changed. There are still noble exceptions, and, as a rule, the best men are the most liberal and communicative. But, in too many cases, when a photographer has hit upon a novelty in working or formula, an ingenious "dodge," or a good preparation, he is prepared to sell the secret "for a consideration"; whilst others, from selfishness or indifference, keep such "dodges" for their own use. Of course, such persons will say that they have a perfect right to please themselves, and look after their own interests, without impeachment. This is scarcely true in photography. Every person connected with the art is so largely indebted to many others for freely communicated information, that he is in a measure bound to pay the debt by reciprocal communication on his own part. There is not a photographer in existence, however much he may have acquired through his own dear-bought experience, who is

not indebted to the freely published hints of others for much more information than at first thought he would be willing to admit. It was by this freedom of intercommunication in former years that photography owed its rapid progress. It is to the interest of the photographic community at large that this freedom of communication should continue—or, rather, that it should be revived.

If photographers generally would adopt a recent hint by Mr. Bovey: taking a specific subject of interest, which is not well understood, and each one who possibly can, attempt to throw some light upon the subject from his own experience: if all would do this, all would be gainers; for each one would either learn something new, or be confirmed in something which he had individually observed, and the "process-mongers," as our American cousins call them, would be cheekmated.

As a commencement, I will suggest a subject. The practice of fuming sensitive paper with ammonia is, I am told, almost universal in America, whilst it is but comparatively little practised here. Is there a good reason for its practice there, or for its neglect here? When the process was first mooted, I tried it, and liked it—I got richer prints and shorter exposure—but by and by I got stains, and rapid discolouration of the paper; and as my operations as an amateur did not demand extensive printing, the fuming box got cast aside, and I have not used it since. Will any of your readers state their experience upon the subject? I am sure it will be interesting and beneficial if the subject be fully ventilated.

Let me add one word on the subject recently introduced by Mr. Hooper—I mean the elevation of the status of photographers. I believe that revival of this liberal freedom of intercommunication would do more than anything else to revive self-respect, and with self-respect of necessity comes elevation of social status.—Yours very obediently,

SENEX.

#### Talk in the Studio.

INVISIBLE PHOTOGRAPHS.—Photographs of the Prince Imperial of a novel kind were seized last week in Paris. By means of a chemical preparation they were rendered invisible on the card, but on being dipped in water they became clear and apparent.

TRANSPARENCIES FOR ENLARGEMENTS.—A correspondent says:—"I have to thank you for your kind replies to my queries respecting Mr. Carbutt's process for making albumen transparencies, as given in the last YEAR-BOOK. I find it much easier to work, more certain, and the results are superior to a process for which I have given £5 5s. I find that much of the perfection of the transparency depends on the collodion used as a substratum, which should be fine and textureless."

ROBBERY IN A STUDIO.—At Clerkenwell Police Court, Abraham Belkadare, a native of Senegal, West Africa, and perfectly black, was charged before Mr. Hannay with breaking and entering a studio, and stealing therefrom nine pairs of plated sleeve-links, two plated brooches, one gold brooch, three lockets, one albert chain, eleven pairs of gilt earrings, three odd studs, and other articles, the property of Mr. George Frederick Ham, watchmaker and jeweller, and photographer, of 130, Euston Road. Prosecutor said he had a studio, which was built of wood and glass, about eight or ten yards from the front door of his house. He was called by a police constable, and having examined his studio, he found two large squares of glass had been taken out. The jewellery had been taken out of two glass cases in the window. Four drawers had also been ransacked, as well as a desk. Mr. Hannay committed the prisoner to the Middlesex Sessions for trial.

PATENT LAWS.—In the House of Commons, on Tuesday the 21st ult., Mr. Crawley asked the Home Secretary whether her Majesty's Government were prepared to carry out such recommendations of the committee on the Patent Laws, contained in their report of 1872, as could be adopted without further legislative powers; and whether he would introduce in the next session of Parliament a Bill for further amending the Patent Laws in accordance with the recommendations of the



committee. Mr. Cross replied that in the opinion of her Majesty's Government it was better to deal with this matter, not piecemeal, but altogether; and that it was their intention to consider it fully during the recess, with a view to legislation next year.

**NEW METHOD OF ENGRAVING.**—At a recent meeting of the French Association for the Advancement of Science, M. Gourdon, of Lyon, described some novel facts which he had observed in the action of acids upon zinc covered with certain metals. Zinc plunged into dilute solutions of sulphuric, hydrochloric, and acetic acids, is attacked only at the points where other metals are present. The metals which produce this phenomenon with most intensity are cobalt, platinum, nickel, and iron. Ammoniacal chloride of cobalt renders it possible to perforate zinc with water containing only one ten-thousandth part of sulphuric acid. M. Gourdon applies these results to various procedures for engraving. By writing directly upon zinc with different metallic inks, making use of the most active, containing salts of cobalt, for the blackest parts, and passing it then into acidulated water, an engraved plate is obtained. To reproduce leaves or plants, they are soaked in solutions of metallic salts, and applied to the zinc, which is then treated with weak acid. The author has discovered a new kind of heliographic engraving, by transferring the silver from an ordinary photographic proof upon the zinc, which can be attacked by the acids in the parts where the silver has been deposited.

**AUTO TYPE REPRODUCTIONS OF EARLY ART.**—The *Athenaeum* is occasionally just to photography. It recently says:—"In the series of British Museum photographs lately brought to a successful issue by Mr. C. Harrison, under the sanction of the trustees of the British Museum, specimens of illuminations, miniatures, and early drawings, were unavoidably omitted. To render the collection of reproductions more complete, it is proposed to issue, uniform in size with the photographs already published, a series of photographs, executed by the autotype carbon process (which combines permanence with pictorial effect and faithfulness), taken from the manuscript treasures deposited in the National Library. The whole set photographed by Mr. S. Thompson, of which the first part is now ready for immediate issue, will embrace the principal European styles, and is calculated to be complete in six parts. The first part will contain twenty plates of full size specimens of work executed in England between the tenth and fifteenth centuries, and illustrates, in a graphic and forcible manner, the finest developments of our early and mediæval English art. The value of the series will be enhanced by an accompanying description in letter-press by Mr. W. de G. Birch."

**PREPARATION OF CHROME ALUM.**—Referring to this subject, *Les Mondes* says:—"The usual method is to dissolve bichromate of potash in sulphuric acid, and reduce by alcohol, or a current of sulphurous acid, and to avoid all elevations of temperature. A new method is to reduce by oxalic acid, and for 100 parts of chrome alum there are used 39 of concentrated sulphuric acid, 29.5 of bichromate of potash, and 38 parts of oxalic acid."

**A COOL CUSTOMER.**—The *South London Press* says:—"A stout old woman got vexed the other day because a photographer wouldn't let her fan herself while she had her picture taken."

## To Correspondents.

**D. REES.**—It is quite impossible to state how much nitrate of silver will be necessary to strengthen a bath after a given number of plates have been worked, because we cannot tell the proportion of bromides and iodides which the collodion contained, nor the number of ounces of collodion used, as an ounce of thin collodion will coat nearly twice the number of plates which can be coated with a thick collodion. As a rule, you will be quite safe if you keep the negative bath replenished in quantity with a forty-grain nitrate of silver solution.

**W. W.**—It is very difficult to say with certainty where you can obtain the powdery textureless collodion required for your purpose. If you made your own pyroxyline it would only be necessary to use weak acids at a very high temperature; but to those unaccustomed the process is a troublesome one. There are many good commercial collodions which do not possess that quality. Try Rouch's; we have had collodion of that quality from that establishment.

**N. S.**—Much depends on the actual condition of the india-rubber. Sometimes the hardness and want of elasticity may be remedied by placing in warm water for a time; but india-rubber is a perishable article, and by exposure to light and air it becomes oxidized, changing to a hard, friable resin, without any elasticity whatever. 2. Ponting's collodion was supposed to be at one time a simply iodized collodion containing iodide of cadmium only. Subsequently, we believe, a little bromide of cadmium was added. A suitable plain collodion—it must not be of too horny a structure—salted with one grain of bromide of cadmium and four grains of iodide of cadmium, will give you very similar results to Ponting's collodion. As a rule, it will be better after keeping a few months than when newly iodized. 3. We are not in the habit of making comments on such subjects, which could be of little service without very exhaustive trial. We have heard good accounts, but have made no trial. It is probably largely a copy of that you mention. 4. Mr. Joubert never disclosed any details of his carbon process. We used at one time to have a column of "Notes and Queries," which gradually got merged into our "Answers to Correspondents," as we found, in most cases, the answers devolved upon ourselves. We shall be glad, in deference to several suggestions, to revive the plan again. See a leader on the subject.

**CANTERBURY.**—It is doubtful whether the amount of gold obtained from the deposits of many toning baths would be sufficient to be worth sending to a refiner's; but you may utilize the deposit on the bottles by making it serve for toning purposes. Place hot water in the bottles, adding a few drops of nitric acid and a spoonful of chloride of lime, and shake well. The gold will be dissolved and after filtration the solution may be used for toning. 2. If a negative be found to require a very slight amount of intensifying after fixing, this may be effected by using a solution of iodine one grain, and iodide of potassium two grains, in water one ounce; or by application of a solution of hydrosulphate of ammonia, which will blacken the deposit. The strength of the latter is unimportant; but the best plan is to use it weak, and immerse the negative in a dish containing it.

**COLLODIO-BROMIDE.**—We have used methylated ether without disadvantage in almost every process, and we have no doubt whatever that it may be safely used in bromide emulsion processes; at any rate, we should have no hesitation in using it. 2. We should use, for diluting the emulsion which had grown thick, about two parts of ether to one part of alcohol. 3. It is difficult to advise. Emulsion with excess of bromide keeps best, whilst with excess of silver it is, we think, most sensitive, and most easy to obtain good negatives.

**PUZZLED.**—Much depends on the mode in which the negatives were produced, especially on the mode in which they were intensified. Some of the processes of intensifying after fixing leave the negative sensitive to light. Negatives which have, for instance, been intensified with bichloride of mercury, followed by iodine, often grow more intense at first after exposure to light, and sometimes they finally become very thin indeed. If you can inform us of the mode by which the negatives were intensified, we may possibly be able to give you some advice.

**C. A. OWEN.**—No. 3 on your list will answer your purpose best.

**A PRINTER.**—It is impossible to say with accuracy the cause of the yellow stains, as they might have been produced in several ways. A touch of nitrate of silver from any source whilst the prints contained hyposulphite, or a touch of hyposulphite when the prints contained silver, would cause such stains; acid of almost any kind, whilst the prints still contained hyposulphite, might cause such stains; imperfect fixation, arising from the use of old or weak hyposulphite solution, or from the prints being imperfectly immersed or stuck together during immersion, would cause such stains, and they would probably appear in such case for the first time during long washing. If they were washed in a dish which had been previously used for hypo solution, contact with the dish might cause the stains.

**G. K. W.**—There are various modes of producing transparencies for the lantern by printing on dry plates. Perhaps the simplest for an inexperienced hand will be the coffee process, which gives very good results. There is no especial secret as to the mode of producing those to which you refer; but the process is not easy to work, and requires much skill, experience, and care. We have several times published the details both in the *News* and our *Year-Books*. The transparencies in question are printed upon albumen. You will find details in our last *Year-Book*, page 130.

**PERPLEXED NOVICE.**—The fact that the marks on your negative always appear near the end of the plate at which the collodion is drained off suggests some imperfection either in the collodion or in the manipulation. Possibly your collodion is thick, or sets rapidly, giving an uneven film at that end of the plate where it flows last; or possibly you are not sufficiently quick and neat in coating the plate. Examine your film carefully, and note if there be some irregularity in the thickness at the point where the stain occurs.

Several Correspondents in our next.



# The Photographic News, August 21, 1874.

## PHOTOGRAPHY IN AND OUT OF THE STUDIO.

### INVISIBLE PHOTOGRAPHS—PHOTOGRAPHY AT COOMASSIE—INDIA-RUBBER BANDS FOR DRY PLATES—PHOTOGRAPHY AND THE ORANGE RAYS.

*Invisible Photographs.*—Another seizure has been made in Paris of portraits of the Prince Imperial, but this time they were invisible ones; that is to say, they were not ordinary cartes-de-visite, but those magic pictures which were brought out as a novelty half-a-dozen years ago. It must require a vigilant police to seize things that are invisible, and a crafty politician to point out the baneful effects of such harmless toys, for these invisible photographs are nothing else. If they are of the character of the invisible photographs which were produced a few years ago, the pictures cannot last any time after they have been developed, as in a couple of days they are as yellow as a guinea; indeed, at best, they are not very striking pictures, and they are certainly never purchased in order to secure a lasting portrait, but only as a plaything. Our readers will doubtless remember how these invisible photographs are produced. An ordinary silver print is obtained, and, without toning or fixing, it is thrown into a strong solution of bichloride of mercury, which has the effect after a time of making every line and marking in the photograph disappear. The invisible picture is then dried thoroughly and placed in an envelope, ready for sale, there being contained in a second packet a sheet of thick bibulous paper which has been soaked in a saturated solution of hyposulphite of soda and dried. To make the image appear again, both these papers are dipped in water, and then placed in contact with one another, when the photograph will again appear almost as brilliantly as it was at first. Care must be taken that both papers are thoroughly dry when put away, otherwise, if packed in proximity to one another, development may take place too soon. It is the simplest thing in the world to prepare such photographs, and any one making the attempt will easily succeed. In this country, for some reason or other, invisible photographs are rarely to be seen at the toy shop, but there is no reason why they should not become as favourite playthings here as they are in Paris and other parts of the Continent. We repeat, they are produced with the greatest facility, and if a demand for them arose, their preparation ought to be a good source of profit to the photographer. It is quite possible, however—and, indeed, from the terms of the announcement, probable—that these invisible photographs were of a different character, and produced by a much less known process, to which we refer on another page.

*Photography at Coomassie.*—We hear that, after all, a photographer did push forward as far as Coomassie with his camera, in the person of an officer of one of the regiments that went to the front. Half-a-dozen small pictures of fair quality are said to be the results obtained; and as the negatives, we hear, have been placed in the hands of the Stereoscopic Company, we may hope soon to see impressions from them. It speaks something for the energy of an amateur to get his apparatus carried so far to the front under the acknowledged difficulties that existed in regard to transport; and we are sincerely glad to hear that what the Government failed in doing, a private individual succeeded in accomplishing at his own expense and trouble.

*India-Rubber Bands for Dry Plates.*—The packing of dry plates during a tour—whether they belong to an amateur who carries them in his portmanteau or knapsack, or to a professional photographer who has proper boxes for their reception—is always a knotty problem. Strips or triangles of glass are good things for separating the plates, if they can be firmly secured, and a flat triangle cap to fit over

the corners of the plates is as good an arrangement, pretty well, as can be suggested. But one wants something elastic to keep the plates together, and rubber rings are apparently the most suitable for the purpose. Unfortunately, india-rubber, when manufactured, is apt to contain sulphur, and it wants no chemist to point out that this substance, in minute quantities even, is sufficient to ruin delicate sensitive films. There may be pure rubber rings to be had, but it is very rarely met with, for the material in its pure state is so sticky and soft, after manipulation, as to be quite unserviceable for most purposes. The ordinary vulcanized rubber ring is of course pregnant with sulphur, which flies out in clouds every time the ring is stretched; and clean red rubber is only a trifle better, for it mostly contains sulphide of antimony in large quantities. In the latter case no free sulphur is thrown off in the atmosphere, but where the band comes into contact with the glass or film, there stains and patches inevitably occur upon the plates on development. Under these circumstances we would recommend that on no account should the band clasp the naked plates, but that one or two folds of paper should invariably be placed round first. The common white rubber bands ought never to be used, but the red antimony ones, unless it is really possible that rubber free from any deleterious admixture can be obtained. Sulphur, it should be borne in mind, is singularly prone to tarnish silver surfaces, and its action is much promoted when the metal is in the fine and delicate state of division we find it on our sensitive plates.

*Photography and the Orange Rays.*—The Vogel-Monckhoven controversy about the sensitiveness of bromide of silver to the orange rays of the spectrum is far from satisfactory, and Dr. Vogel's argument has recently been considerably strengthened by a statement of M. E. Becquerel, whose name is widely known as a scientific photographer and physicist. This gentleman affirms that M. Deshaies, of the *Conservatoire des Arts et Metiers*, has been able to reproduce some of the results obtained by Dr. Vogel. If this is the case, we no longer have the learned Berlin Professor standing alone as a champion for the actinic power of orange rays; but, apparently, we are not yet very near to the solution of the problem. Both Dr. Vogel and Dr. Monckhoven have promised to pursue their investigations further, and to publish the results.

## AMERICAN CORRESPONDENCE.

### THE PLUMBAGO PROCESS FOR REPRODUCING NEGATIVES—THE "GLACE" PROCESS.

*The Plumbago Process for Reproducing Negatives.*—A friend sends me the following details on this most valuable invention. He says:—

"I have been solicited by several photographers and others to give my experience in reproducing negatives by what is known by the 'powder' or 'graphite process,' and having carefully tested it for the past three months, I am prepared to endorse it, and, with your permission, will give the details of the process as I find best in my practice.

"The process is not new, being based upon a method invented by F. Joubert, and explained by him in a paper read to the Photographic Society on March 4th, 1862, an account of which will be found in the *PHOTOGRAPHIC NEWS* of March 14th, 1862, page 125.

"The first use of this process for the reproduction of negatives that has come to my notice was from Obernetter, of Munich, who gave a full description in the *PHOTOGRAPHIC NEWS* for March 27th, 1874. Since then a modification, by W. Woodbury, was published in the same journal for May 22nd.

"In recent experiments with these processes I find that with Obernetter's method our climate is too changeable to secure uniform success; and by Woodbury's method, though better adapted to our climate, there is too much uncertainty in transferring the negative after it is made; but where a reversed negative is required, Woodbury's method is all that can be desired; still I prefer a modification of Obernetter's, for the reason that the



resulting negative may be reversed or not at pleasure, and I have succeeded best with the following formula, viz. :—

Dextrine	...	...	...	4 grammes
Glucose...	...	...	...	4 "
Bichromate of potash	...	...	2	"
Water	...	...	100	"

"In very dry weather, and for very intense negatives in pure line, ten drops of glycerine may be added; but in warm weather, and for negatives full of half-tone, I prefer to leave it out entirely.

"This mixture is thoroughly dissolved by heat, and filtered, and a carefully cleaned glass plate is coated in the same manner as with collodion, except that it is allowed to stand a few seconds on the plate, so that all portions may be evenly coated; the surplus may now be poured back into the bottle, and the plate thoroughly drained on bibulous paper, and dried over a spirit lamp or a Bunsen burner, and then placed in contact with the negative to be reproduced when still warm, and exposed to light until the slightest trace of an image is visible, which will require about one minute in sunlight, or from two to five minutes in strong diffused light. The plate is then taken to a place where the light is not too strong, and brushed over with a camel-hair brush dipped in the finest graphite. The image will slowly develop, and may be strengthened by continued brushing to any desired intensity; but care should be taken not to make it too strong, as the graphite holds back the light more than silver. A negative, to print well, should be about as strong apparently as a good solar negative.

"Breathing on the negative should be avoided, except on pure line work where great intensity is required. On these breathing or blowing on weak parts may be an advantage, and such negatives can readily be made pure black and white. When the proper strength is attained, the plate must be coated with a thick plain collodion, and when well set immersed in a dish of water. One minute will be sufficient to remove all the yellow colour, when it should be dried; but if it should be required for ordinary silver printing it must be left in water until the film becomes detached, when it can be turned over with a camel-hair brush, and by holding the corners of the glass and film together, lifted both out together; drain, flow over with gum-water, and dry. Should there be dark spots in the negative, they can be avoided by using less glycerine, or keeping the plate slightly warmed during development. Transparent spots are caused by particles of dust or grease that repel the solution, making the coating thinner where they occur; if the solution is allowed to stand on the plate a few seconds before pouring off, these spots will not occur.

"My best results are with plates that require at least five minutes to develop, and the surface of the negative always retains a brilliant lustre, and the less glycerine used the better the lustre, but too little will prevent the development.

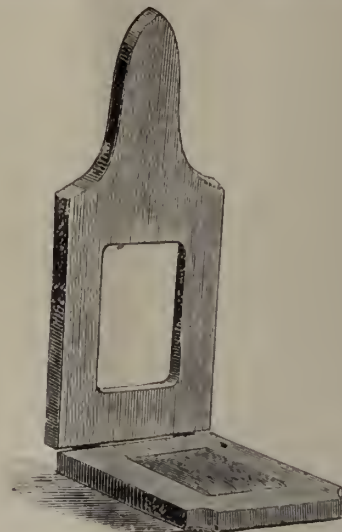
"It has been until recently impossible to obtain suitable graphite for this purpose; but I have to thank the American Graphite Company, 24, Cliff Street, New York, for the interest they have taken in the matter, by preparing the article in such a manner that I doubt whether there is any in the world that is better; and they have consented to put it up in any quantity to suit photographers and amateurs for experiments.

"Whenever a large number of pictures are required from one negative, this method has proved in my hands superior to any other, and I have no doubt but enlargements can be made as well if the exposure is made in a solar camera. This I have not tried yet, but intend to do so soon."

*The "Glaze" Process.*—For those who like plenty of "shine" on their pictures I add the following hints, from Mr. E. D. Dunsby, of Chicago :—

"Take a piece of clear glass, free from bubbles or scratches and clean by immersing in a solution of concentrated potash overnight. Wash thoroughly in clean water, and immerse for a few minutes in a mixture of nitric acid and water, one part of acid to three of water; let dry from the acid without washing. Now coat your plate with the following: plain collodion, one ounce; glycerine, one-half drachm, and let dry. Then take sheet gelatine and soak it in cold water until it is soft, then put it in a cream pitcher, or a wide-mouth bottle, and cover with water; dissolve the gelatine by heat, immerse your print in this warm gelatine, and lay face downward on the collodionized plate, carefully pressing out all air-bubbles; now cement with gelatine a piece of thin Bristol board, previously dampened to make it pliable, to the back of your print; let dry thoroughly, and loosen the edges with a

knife-blade, by running around the glass between the print and glass, when the whole thing will leave the glass with a very superior polish; it is now ready for pressing in Ormsby's cameo press, the simplest, most practical, and cheapest cameo press ever



invented. Any carpenter will make one for about three dollars. The press and process are free for the use of the fraternity. This process is superior to any. Where rubber is used in the collodion, they will never crack in pressing, and where the rubber gives less polish than collodion alone, the addition of glycerine gives an extra polish. I enclose you a photograph of my press. It is made of maple wood, three-quarter inches thick. The raised centre for moulding is glued on. It is so simple that the photograph explains it. The top and bottom are hinged together. My press and process have the endorsement of the Chicago Photographic Society."

EDWARD L. WILSON.

## GERMAN CORRESPONDENCE.

THE DULL SEASON—AMERICANS IN GERMANY—RETOUCHERS AND RETOUCHING—OBERNETTER'S METHOD OF MAKING TRANSPARENT POSITIVES—VENUS EXPEDITION—PHOTOGRAPHIC RESEARCHES WITH THE SPECTRUM.

BY DR. H. VOGEL.

WE are now in the midst of the dull season. In spite of the cold summer and incessant rainy weather, the metropolis gradually gets empty. The can-get-aways go to the watering-places or to the mountains; and gradually our galleries assume a deserted look; only now and then a timid stranger puts in an appearance with the red Baedeker or the brown Murray in his hand. Amongst our visitors are many Yankees, who ask for a ferrotype, or even a porcelain picture, neither of which are made here. At this writing a caravan of forty ladies is staying in Berlin, and all of them have been immortalized in the shape of Berlin cards.

"Do you consider the Berlin pictures superior to the American ones?" I asked a young American lady who had her picture taken. "Oh no," she answered, "I consider the American ones better, and only get a picture here so as to show my countrymen how far we are ahead in photography." Such patriotism is very acceptable. I have always met it in the American ladies. "Do you know Mr. Roeder, of Chicago?" inquired another lady. "Yes, Madam, very well," was my reply. "Is he not the first photographer in the world?" exclaimed the lady. "No, that is Mr. Scholten, of St. Louis," replied her friend, a resident of St. Louis. You see that the American photographers are very well defended here, and I would propose that at a future international exhibition (1885, in



Berlin ???), America will send female jurors only—young and handsome preferable.

Although business is very dull, our society has not been idle; the summer meetings were even better attended than the winter ones; and recently a very animated discussion was devoted to the negative retouch, but this time the discussion did not turn on technical matters, but on the retoucher himself. The cause was the fate of several retouchers, who, relying on their art, had opened galleries for themselves, and, in spite of their skill as retouchers, had failed of success, because their manner did not please the public, or they did not possess the ability to pose and light a person rapidly and properly, or because they lacked business ability. These facts have demonstrated that to carry on a photographic business more is necessary than merely technical skill. On the other hand, it was maintained that the proprietors of many galleries are good business men, and know how to make money, but do not possess any knowledge of art, and expect of their retouchers impossibilities. It is certain that the photographic negative retouch does not exercise a beneficial influence on the photographer. Fritz Luckhardt, in Vienna, states that he had a first-class artist as retoucher, who, in the beginning, made excellent work, but afterwards displayed a tendency to make everything smooth, and even to remove the characteristic lines. This is not brought about by want of taste or knowledge of art, but is due to the fact that the eye becomes dulled by use, and the opinion is general that no one can stand it longer than ten years. Mr. Prumm employs his retouchers for half a day on the negative, and the other half on the positive, and states this change enables his workers to last much longer. Lately a reaction against excessive retouching has set in. A number of photographs from 1862 were exhibited, at which time retouch was unknown, and the opinion was generally expressed that, artistically, and in point of reproducing the characteristic features, they were fully equal to the productions of the present day. The retouch is now curtailed by many, and I have particularly to mention an artist by the name of Technor, who makes excellent portraits, which he retouches only with a few lead pencil lines. We have learned also that no artificial light effects are necessary in order to produce a characteristic portrait. Side-light pictures, Rembrandts, and other tricks, have long been laid aside.

Another important chapter which is discussed a good deal is the reproduction of negatives. The labours of Obernetter in this branch cannot be over-estimated. Of course, not everybody will obtain good results with his process; but the matter is of such great importance that no one should give it up if the first attempts are unsuccessful, as perfection can only be acquired by practice.

Obernetter has recently published a process of making a positive from a negative by means of the dust process. This process is not as important as the other. The making of negatives from a positive may also be made, with little trouble, by the collodion process. Besides, the time of making positives by this process is, according to Obernetter's statement, longer. The method itself is not new, and was originated by Poitevin. The latter took a solution of chloride of iron and tartaric acid, and coated with it a plate of ground-glass, and, when dry, exposed it to light. The light reduces the sesquichloride to a chloride; the latter, when exposed to the air, attracts moisture, and pigment powder dusted over it adheres to the same. Obernetter recommends for this process the following mixture:—

Citrate of the oxide of iron	...	10	grammes
Citric acid	...	5	"
Sesquichloride of iron, concentrated	...		
solution	...	2	"
Water	...	100	"

The citrate of iron is finely pulverized, and is placed, with

the other ingredients, in a flask, and heated to boiling, and left to stand until the citrate of iron has dissolved. When cold, the solution is filtered. The plates which are prepared with this solution are slightly warmed, coated, and dried in a drying oven. In from five to ten minutes the plate is dry, and placed, while still warm, in the printing-frame, on the negative, and exposed in the sun for from eight to ten minutes, in the shade for one hour. After exposure, we breathe upon the plate, when a feeble image will appear. By means of a brush, plumbago or red oxide of iron is dusted over the plate. Obernetter states that it is easier to dust such a plate than one prepared with chromate of potash. When the plate has been dusted, it is coated with plain collodion, placed in water for four minutes, when the film is removed, and transferred to another surface. If the picture is to remain on the original surface, a three-fold diluted solution of iron is used in the preparation of the plate, and the plate is coated with castor oil collodion, and left to dry. The picture can be varnished.

The expeditions for the observation of the transit of Venus are starting. On the 22nd, one of our parties started, in the man-of-war *Elizabeth*, for Kerguelen Island, and will meet on this uninhabited group of islands the English expedition and your countrymen, and lead, for at least eight weeks, a scientific Robinson Crusoe life. In two weeks, the second expedition starts for Auckland Island, south of New Zealand. This one Krem, of Dresden, accompanies, with his son, as photographer; and four weeks later the expedition for China departs, with which I intended to sail, but, unfortunately, my obligations here make it impossible for me to be absent seven and a-half months. I regret that I will not be able to give to your readers photographic reports of India and China, but hope to find here sufficient material.

My credulity is somewhat shaken when I read that not only your honoured townsman Mr. Carey Lea, but also my honoured colleague Monekhoven, enter the field against my discovery of the action of yellow and red rays on bromide of silver. He has repeated my experiments, not with coloured glasses, but with the true, real, genuine spectrum, and has not obtained my results. Yes, and he asserts that in the Ecole Normal in Paris, and in Bunsen's celebrated laboratory in Heidelberg, my experiments have been repeated without success. An anonymous writer in the *British Journal* speaks in the following manner:—"Messrs. Carey Lea, Spiller, and others, have given the final *coup de grace* to this notion of Dr. Vogel, and his fine theory of a prolongation of the action of the more refrangible rays of the spectrum must henceforth be relegated to the limbo of photographic abortions." First executed, next banished (relegated), and fortunately I have suffered both proceedings from the distance without any inconvenience or damage, and have even, as an executed exile, the impudence to continue my experiments. If I had only tried two or three plates with the spectrum, a doubt might be possible; but when two to three hundred experiments have been made with absolutely the same result, there must be something more in it than a photographic abortion. Photographic spectral experiments are rather difficult to make. They cannot be repeated with coloured glasses, for these colours are impure, and experiments with impure colours belong to the same category as a chemist who wants to make a chemical analysis with impure chemicals. The objection that the spectral colours are not always pure, either, is not valid, for the same can be said of the "pure" reagents of the chemist. Monekhoven has experimented with pure spectral colours, and did not obtain my results. The explanation is easily found. Monekhoven's spectroscope had a slit seven and a-half times smaller than the slit of my instrument, hence seven and a-half times less light entered his instrument than mine. Further, he elongated his spectroscope to forty centimetres—that is, he made it seven



times longer than mine—and the consequence was that his instrument was fifty times more feeble in light than mine. Now with my instrument of great intensity of light, I had to expose for three minutes in order to obtain an impression in yellow. Monckhoven would have obtained the same result if he had exposed for three by fifty minutes, or one hundred and fifty minutes. Instead of that, he states that he exposed for two minutes only. Monckhoven is in the position of a photographer who wants to try a very sensitive instantaneous collodion, and employs for the purpose a slow-working landscape lens of feeble light. I have to mention still another mistake. Dr. Monckhoven probably coloured his plates too highly. An intense colour is not beneficial, but objectionable. Each particle of bromide of silver is surrounded by an envelope of coloured collodion. If the colour is too intense, the light is weakened too much by being absorbed by the envelope, and can, therefore, not act with sufficient energy on the bromide of silver. A weak colouring, which can only be established by experiment, is the only way to success.

### PHOTOGRAPHING AN EXHIBITION.

A PAPER recently read before the Vienna Society, by Mr. Oscar Kramer, gives a graphic account of the troubles and disasters of the Association of Vienna photographers who undertook the contract for photographing in the exhibition, an undertaking for success in which, in various English International Exhibitions, Mr. England has acquired a reputation quite equal to that he had already secured for his stereoscopic and other landscape work. To commence with, the "World's Exhibition" at Vienna seems to have been a failure throughout, and, so far as the task of photographing its contents is concerned, that failure seems to have deepened to disaster. We make a few extracts which may be useful as beacons, if not as guides, to photographers who may undertake similar work. After some preliminary statements, Herr Kramer says:—

"In my address of last year, I described how the four ateliers formed the association and established themselves in the exhibition grounds, and called able assistance in from other places for special branches. The working corps for taking negatives numbered fifty men, and the supply of instruments consisted of more than one hundred pieces. This well organized and supplied body entered hopefully and energetically upon the campaign, prepared, indeed, to find it one of hard work, but little expecting that it would soon partly resolve itself into a struggle for their rights. Difficulties, some unavoidable, some invented for the occasion, arose in all quarters, involving the association in such perplexity as to demand for the successful fulfilment of its mission the greatest zeal and self-sacrifice on the part of all its members.

"Our first great enemy, one against which the photographer stands powerless, was the bad weather, which lasted during the greater part of May and the whole of June (I need only remind you of the opening day, in anticipation of which eight scaffoldings had been erected, four on the rotunda, and four before the southern portal, capable altogether of taking sixteen groups, and all of them useless when the time came). That rainy epoch was marked by countless spoiled impressions and useless negatives, and the infliction of a general catarrh on the photographers. But besides the unfriendly Jupiter Pluvius, there was another god, upon whose favour and assistance the association confidently relied, but who often left it badly in the lurch. This was his Excellency the General Director, Baron Schwarz. This personage, on my frequent pressing visits to him—visits which involved for me the loss of hours and days—always evinced the utmost courtesy and readiness to enter into my well-meant representations and proposals; but, amid the press of other weighty matters, unhappily too often forgot to give the necessary orders for executing them.

"Nothing but the splendid promises of the General Direction, and their assurances secured by contract, would have induced the Messrs. Frankenstein and Co., Klösz, Löwy, and myself to undertake the hard and delicate task, which no one else had dared to venture upon, in view of the losses which those suffered who undertook the photographic work at the last exhibition at Paris. These promises and obligations have in many important particulars remained unfulfilled. By the provisions of our contract with the General Direction, we were to have in the exhibition buildings an

office, and the necessary number of dark rooms for our photographic operations. We received neither the one nor the other, and were at last forced to erect a building for our laboratories and offices, at a cost of 15,000 florins, and also to construct a number of dark rooms on wheels. Our supply of water had been secured by contract; but we were obliged to negotiate for more than four weeks before the pipes were actually laid. Among other things the General Director promised to aid us with considerable orders for photographs, and we made the pictures of the buildings in process of erection, relying on this promise, for it is easily seen that there is no profit in pictures of that character, they being of interest only to a small circle of specialists. This promise also remained unfulfilled. Indeed, an order given in the beginning was afterwards countermanded, and most of the pictures returned. Have thus been deprived of the protection freely and solemnly promised us, we were further exposed to many vexatious hindrances by over-zealous officers. When, for instance, the General Direction posted up placards forbidding the reproduction of articles in the exhibition by drawings or copies, all operations of the association, which had been created and commissioned specially for the exhibition, came immediately to a standstill, for the General Direction forgot to exempt us from the decree; and so for weeks and months our operators were driven off by the officers, hindered in the performance of their duty, and even several times arrested, in spite of certificates signed by his Excellency himself, in spite of special permits, in spite of our petitions and protests. In one case our apparatus was confiscated in the Italian department, and we were obliged to take special steps, and lose much time, to get it back again.

"It was a great hindrance to us, during the first months, that the greater part of the arrangements for the exhibition were not yet completed. The unpacking of articles by exhibitors, operations of decorators and work-people, a medley of boxes, carts, unfinished gardens, planks nailed up to prevent passage, unpainted pedestals not yet surmounted by statues—all these either prevented us from taking pictures, or made it necessary to repeat them afterwards. We had to overcome countless difficulties, some caused by the crowded space, some by necessary and unnecessary safety regulations. Our people were not allowed to begin work in the interior of the exhibition buildings before 7 a.m., and by 6 or 10 a.m. it was generally no longer possible to take pictures, on account of the assembling public. In these rooms no photographs whatever requiring long exposure could be made, principally on account of the unsteady floor; so that for several hours the gallery was as good as closed to us. Our Mr. Laury had brought with him from Paris three ingeniously contrived pieces of apparatus for dry plates, expecting to set them up in the galleries in the evening, and expose them there until morning. They could not, however, be used a single time, because the floor vibrated under the tread of the patrol and washer-women, and rendered it impossible to get a clear, sharp, well-finished negative. On account of the very bad arrangement of the articles exhibited, the perspectives of nearly all the galleries, otherwise so imposing, were spoiled, and very few lofty, firm stand-points were obtainable from which good interior views could be taken. Besides this, the reflex lights playing about objects rendered the hope of getting a good negative illusory, and it was often necessary to spend time and money in arranging tapestry hangings for regulating the light before we could accomplish our object.

"Our operations in the Hall of Art were attended with similar calamities. The photographers were strictly forbidden to move the pictures from their places, and, as a consequence, certain paintings could not be photographed at all during the exhibition. It also required much time and pains to get permission from the artists themselves to photograph their pictures. Most of them never answered our repeated requests. Replies from some were received in January and February of this year. This passiveness or reluctance of the artists is much to be regretted, since it causes a serious gap in our collection of pictures. The Italian sculptors were, however, very courteous, and we therefore have reproductions of nearly all their works, which will soon secure for them a large circulation and great popularity.

"We also met with many difficulties from the exhibitors themselves. Here was one who wanted nothing but his own stall included in his picture—his neighbours meanwhile refusing to have their articles shut off from view. There was another, not content to shine in his own feathers, but wishing to don those of his neighbour too—a thing which the latter would by no means consent to. And so the photographer had not seldom to play the part of mediator, or get involved in a quarrel with two or three parties, while executing a single order.



"While our operators were thus perplexed and hindered, and put to needless expense by a hundred vexatious circumstances, other things combined to reduce very materially the receipts of the association. I need make no reference to our delusive hopes of a large attendance at the exhibition. In this respect every one was completely deceived, from the projectors of it to the needy citizen who with his family took up his quarters in the kitchen, that he might let his rooms to some "rich Californian." Although the slender attendance cut down the sale of our photographs, there was still another important circumstance, which would have made it impossible to dispose of a large quantity, even had the attendance been very large. According to contract, all sales of photographs of the exhibition were to be made by the so-called Exhibition Book Association. This establishment, besides coming into the field at too late a day, was situated in an out-of-the-way place, where few looked for it, and nobody found it. The pictures went off so slowly that we should not have been able to cover the expenses of a single month by our sales during the whole period of the exhibition. At length, in July, after endless running to and fro and loss of time, we obtained permission from the General Direction to set up some tables in the exhibition buildings, and engage saleswomen. Thus nearly everything which was to have been provided for us by the General Direction, in accordance with our contract with that body, we were finally obliged to procure at our own cost, in spite of the fact that our license had been rated at the large sum of 20,000 florins.

"Such is the sad story of the Association of Photographers for the World's Exhibition of 1873."

The following negatives were taken:—

Folio size,	{ Negatives 81	92 negatives
	{ Duplicates 11	
Half Folio size	{ Negatives 84	91 "
	{ Duplicates 7	
Quarter Folio size	{ Negatives 1358	2744 "
	{ Duplicates 1386	
Cabinet size	{ Negatives 1694	3492 "
	{ Duplicates 1798	
Stereo. size	{ Negatives 506	1102 "
	{ Duplicates 596	
Cartes-de-Visite	{ Negatives 2571	6847 "
	{ Duplicates 4276	
Giving a total of	14,368	"

without reckoning several hundred negatives made by Mr. Schnäbeli at the Animal Exhibition, and a large number of spoiled plates. The whole cost of a complete collection of the photographs, reckoned at the usual retail prices, would be about 5,000 florins."

## PRINTING PHOTOGRAPHS IN GREASY INK WITHOUT A PRESS.\*

You commence by obtaining in the first place, by means of the carbon process, an impression upon a glass plate (its provisional support), which is covered with a varnish made from a solution of 2 to 3 grammes of good gum dammar in 100 cubic centimetres of purified benzole.

The print is then surrounded by a margin, or framework, by means of a mastic of some kind, while you prepare in a water bath the undermentioned solution:—

Gelatine	...	...	...	1 part
Gum arabic	...	...	...	1 "
Glycerine	...	...	...	2 parts

Dissolved in as little water as possible.

This mixture is poured in a tepid state upon the carbon print, which is slightly warmed, so as to form a thick film over the image. When the gelatine compound has set sufficiently, it is detached from the glass. The mass of gelatine, in which is incorporated the carbon print, when reversed and applied to some plain surface, is then ready to serve as a printing-block.

The image, formed of gelatine, which the light has rendered insoluble, takes the printing ink, while the ground of the image, formed of gelatine in its natural state, absorbing moisture easily, repels it; these two effects, opposed to one another, are produced in proportion as the light has acted upon the carbon tissue.

When you desire to take off impressions from the film,

it is inked with ordinary lithographic ink of a hard character, moistened with a little olive oil, oil of turpentine, or indeed, any oil with the exception of boiled oil.

To ink in, use is made by preference of a roller of ground glass (a tube of large diameter). The ordinary lithographic roller employed for stone adheres too firmly to the surface, and has a tendency to mutilate the image.

A little ink is applied to the roller in patches, and then, to get the same equally spread over the surface, the roller is worked to and fro over an elastic body. A gelatine surface similar to that carrying the image is just suited to the purpose.

When the roller is uniformly covered with ink, without being too much charged, it is passed over the carbon print until the latter appears to be sufficiently inked. If need be, the superfluous ink may be removed with a damp rag, and a linen cloth moistened in water will take away any dirtiness that may be seen upon the plate.

If the ink employed is too hard, it will be found to adhere only to the deep shadows; if you wish it to adhere to the half tones, it must be thinned a little. This circumstance may be made use of to get more depth out of the shadows, and also to obtain from one plate prints of various tints. You proceed as follows:—

Two or three inks of different thicknesses, and, if you like, of different colours, are prepared. You commence by inking the print with the thickest, which only adheres to the deep shadows, and then proceed to apply one more dilute; this does not act upon the first layer of ink, but attaches itself to the half-tones, and to these only. In this way impressions may be obtained upon a coloured ground.

To produce your impressions, you apply a supple sheet of paper—which may be glazed or covered with uncoagulated albumen—to the inked surface, and press it upon the film by means of a rubber squeegee, or scraper, or by the aid of a flannel roller. When sufficient pressure has been exerted, the sheet, carrying upon it the impression, is gently raised, and separated from the film. You then proceed to pulling off a second print, inking up the image with care; but before doing this the printing block should be gently wiped with a damp rag.

To obtain prints with a margin so that they need not afterwards be mounted, a paper mask is made with an opening corresponding to the size of the print, and this mask is interposed between the inked block and the sheet of paper to be printed upon.

The cliché to be employed must be a reversed negative—that is to say, a negative which has been obtained in the camera *through* the glass. If such a negative is not forthcoming, then the development of the carbon print is conducted upon stearine paper prepared by placing a sheet of albumenized paper upon a bath made up of—

Alcohol, ordinary	...	...	100 cub. cents.
Stearine	...	...	15 grammes
Resin, ordinary	...	...	2 "

The resin is dissolved in a warm state, cut up into fragments in the alcohol, and the resin is added after solution. The carbon print developed upon this provisional support is then transferred to a plate glass, and covered with gum dammar varnish.

The facility with which, by this process, it is possible to print upon rounded objects, such as bottles, vases, &c., allows you to employ it for ornamentation, vitrifiable pigments being used for inking the film.

The principal advantages that this method of printing in greasy ink enjoys for producing photographic positives are:

1. The absence of any complicated apparatus, so that it may be employed by any amateur.
2. The formation of the printing block upon a gelatine surface, necessarily very uniform and exempt from pressure, without having recourse to any method of preparation.
3. The large number of prints that a prepared film will furnish in this way, the inking and pulling off of pictures having little destructive effect upon the block.

\* Bulletin Belge de la Photographie.



# The Photographic News.

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## INVISIBLE PHOTOGRAPHS.

Most photographers are familiar with the invisible photographs which became popular as toys a few years ago, the invisible image being formed by treating a silver print with bichloride of mercury, the mode of rendering it visible again consisting simply in bringing it into contact with hyposulphite of soda. To this method we briefly refer in another page. The seizure, in Paris, of invisible photographs of the Prince Imperial revives the subject in public interest; but it is probable, from the terms of the paragraph announcing the seizure, that the invisible portraits were not of the character of the toys referred to. In the first place, immersion in water simply would not render visible the images produced by the action of the mercury salt; and, in the next place, such an image, once made visible, cannot be easily again rendered invisible. It is manifest that the especial charm about an interdicted print would be the possibility of making it visible and invisible at will. There is, however, a form of invisible photograph which can be rendered visible in a few seconds, and in a few seconds more invisible; and as the method, although very simple, is comparatively little known, a few words on the method of producing them may interest our readers.

We may premise that, although the process is simple and obvious enough, we do not remember to have seen it described, nor to have met with other examples than those we have ourselves produced, and one forwarded to us some years ago by a correspondent, without any details as to the mode of production. This print—the first of the kind we had seen—appeared to be a stout piece of plain paper, with instructions written on the margin to float it on water. This done, in a second or two an image appeared on the plain paper, but it required an examination by transmitted light to appreciate it. So examined, it presented a very good transparency, the paper having quickly absorbed water, and become quite transparent in the lights, whilst the shadows of the picture were formed by the paper being non-absorbent, and remaining opaque in the dark parts. Many of our readers will at once appreciate the principle upon which the picture was produced, and upon which we proceeded to produce something similar. A variety of experiments were tried. Ordinary albumenized paper was floated upon a twenty-grain solution of bichromate of ammonia, dried, and exposed under a negative, and then soaked for some hours in warm water. The result was only a partial success, the lights being insufficiently transparent, and the shadows insufficiently opaque. Stout printing paper, and Turner's

calotype paper, gave pretty good results, but still not quite perfect. They required very long soaking in warm water, to which a little carbonate of soda was added, to dissolve and remove all the sizing of the paper, so as to render the lights absorbent enough to become readily transparent.

But the best result was obtained by commencing with bibulous paper, and adding to it all that was required to form an image. We used a stout bibulous paper of the character of plate paper. This was floated for a few minutes upon a weak solution of gelatine. We can only estimate the strength; but it was probably about a ten-grain solution. This, after drying, was immersed for a few seconds in a twenty-grain solution of bichromate of ammonia and dried (in the dark, of course). The paper so prepared was exposed under a vigorous negative for about the same time we should expose a silver print, a well-marked brown image on the yellow ground being obtained. This was washed in a few changes of warm water, and then left to soak for a few hours, after which it was dried. After drying it is only necessary to float the print for a few seconds in water, and render the image visible. The gelatine has been rendered insoluble and non-absorbent wherever light has acted upon it sufficiently, and therefore it remains comparatively opaque when brought into contact with moisture. But in the lights, where the gelatine has been protected by the dense parts of the negative, it maintains its solubility, and is readily removed, as well as all traces of the unaltered bichromate, by the washings in warm water, and the bibulous paper in these parts retains its ready capacity of absorbing water, becoming transparent when wet.

The first conclusion of the experimentalist familiar with the ordinary results of printing with chromates and organic matter will be, that from the operations described an invisible image, strictly speaking, would not result. The first action of light upon a surface of gelatine and a bichromate is to produce a brown tint, the result of the formation of chromate of chromium. This, when submitted to the action of water, is decomposed, a pale green image of sesqui-oxide of chromium being left. To remove this tint requires long soaking, and perhaps a little aid from the action of a dilute alkali. Repeated washings with warm water, to one or two of which, as we have suggested, a little carbonate of soda has been added, gradually remove the green tint, leaving a colourless image of gelatine, only rendered visible by its insolubility and opacity upon a ground of readily absorbent paper, which becomes transparent at once on being placed in water.

Besides the interest attaching to a print which can be made visible or invisible at will, a variety of curious applications for such a process will readily occur to readers, which we need not here indicate.

## PRELIMINARY COATINGS OF ALBUMEN.

In the hands of the majority of photographers the use of albumen as a substratum in the wet collodion process has of late years proved a complete success; but, oddly enough, in the hands of a few—and these experienced and capable men—it has proved beyond question a failure. It is somewhat important to ascertain the cause for this; because, where the plan succeeds, it is full of advantages. It saves half the trouble and all the anxiety of securing clean plates; it tends to the production of a finer negative, and it removes all risk of the film splitting from the glass. Where, however, it is a failure, it is fatal: it destroys the photographer's sheet anchor, a nitrate bath in good condition.

A communication from an experienced and capable amateur photographer on another page describes the phase of failure after repeated trial. Unfortunately, at a point of some importance in the statement of the difficulty is not included, namely, the strength of the albumen solu-



tion, and its mode of preparation. Much, if not all, depends on the albumen solution used. When, many years ago, albumen was first used as a preliminary coating, it was customary to use white of egg alone, or very slightly diluted, and the result was almost invariably a disordered bath and foggy negatives in a very short time. Mr. McNab, one of the earliest portraitists who employed the albumen substratum in his regular wet plate work for portraiture, found it necessary to coagulate the albumen film, which he effected by application of a solution of sulphate of iron, and this he found effectual in preventing injury to the bath. Various other portraitists gradually followed Mr. McNab's example when we published his experience twelve years ago. Mr. Henderson, of Perth, was another of the early workers with albumen as a substratum, and he also in early years was in the habit of coagulating the albumen. After trying various formulæ, originally using equal parts of white of egg and water, with a little ammonia, he finally adopted a very much more dilute preparation, using the albumen of one egg, twenty ounces of water, and one ounce of spirits of wine. With his plates prepared in this way, he informs us, he has for many years experienced not only total immunity from trouble, but better results in every way than he could obtain without the aid of the preliminary albumen coating. Some able and successful men work with an albumen solution containing forty ounces of water to the white of one egg, and in one case we have heard of the use of one hundred ounces of water to the white of one egg, giving a solution so attenuated that it is difficult to believe that it would leave an appreciable film on the glass.

The tendency of the evidence on the subject that has come under our attention from time to time has led us to the conclusion that danger to the bath arises from two causes: the use of the solution unnecessarily strong, and allowing the albumen to run over the edges of the plate. The first is easily avoided by using the most dilute preparation which has been found efficient, say the white of one egg to a quart of water; and the second is avoided by the use of a Blanchard brush for applying the solution, which will permit the coating to be brought within a quarter of an inch of the edge of the plate without risk of any running over the edges, so as to come into direct contact with the nitrate bath. From the experience and care of our correspondent, we can scarcely suppose that neglect in relation to either of these sources of error can have been the cause of his failure, and we shall be glad if any of our correspondents can throw additional light on the question.

## THE PRACTICAL PRINTER IN AMERICA.

### IV.

#### MODES OF RECTIFYING THE PRINTING BATH.

A PRINTING bath, the proper strength of which is maintained by the addition of one ounce of nitrate of silver to each quire of paper sensitized, and sufficient water to maintain the normal quantity of solution, will rarely require much doctoring, especially if the suggestion given in a previous chapter, of keeping a little carbonate of silver in the bottle, be adopted. Mr. Hearn, however, gives a resumé of the various modes available for removing discolouration. He says:—

"The bath, after it has been used for some time, discolours, owing to the albumen of the paper being left in it after floating, or dirt and other impurities having got into it through accident, leaving the dish uncovered when the bath was not in use, imperfect filtrations, and chemical matter which was impure, and by age having showed itself.

"*Permanganate of Potash.*—When the bath is only a little discoloured, and is a new one, this solution will for awhile answer capably:—

Permanganate of potash...	60 grains
Pure water ... ..	6 ounces.

Add about half a dozen drops, and stir the solution well with a clean glass rod. At first the bath will turn a dark rose colour, and it will then considerably lighten, and if it does not stay so, but utterly disappears, then add a few drops more until a temporary colour appears. Now place the bath out in strong sunlight for half an hour, and after it has thoroughly cleared, and the rose colour has disappeared, the organic matter can, in a great measure, be filtered out.

"Mr. Elbert Anderson, in his book, 'The Skylight and the Dark Room,' accounts for the action of this permanganate as follows:—'As soon as the permanganate comes in contact with the bath the organic matter becomes oxidized, and permanganic acid is liberated, forming permanganate of silver, which remains in the bath, and is precipitated to the bottom in dark, brownish-black flakes, whilst the permanganate itself is converted into peroxide of manganese. As soon as the solution is perfectly clear, most of the organic matter will be filtered out. Thus the permanganate precipitates most of the organic matter without the least injury to the bath.'

"*Kaolin.*—This is often used for clearing up the printing bath. A little of this powder is placed in the bottle containing the discoloured bath, and the solution thoroughly stirred with a glass rod, and then allowed to settle for the space of a few minutes. Filter the decanted solution through cotton, and at night pour the bath again into the bottle containing the kaolin. Thus the same kaolin can be used for a great number of times.

"Mr. F. A. Bridge, in the YEAR-BOOK for 1873, recommends, for those printers who use the kaolin, a simple apparatus described as follows:—'Take a large wide-mouthed bottle (depending upon the quantity of solution you have in use), fit a cork to it, and bore three holes in it, one large enough to admit the point of a funnel, going well through the other side, and the other two large enough for a piece of ordinary glass tube. Bend a piece of tube in the form of a syphon, let one end reach to within about an inch of the bottom of the bottle, and let the other end be a few inches longer; break it off below the turn in the longest side, and join it together again by means of a piece of india-rubber tubing about two inches long; put another piece of glass tube (slightly bent for convenience sake) just through the cork, and the thing is made. Put some kaolin in the bottle, and after using the solution return it to the bottle through the funnel over-night, and shake it; it will be quite clear by the morning. When again required for use, you have only to cover the top of the funnel, put the long end of the syphon in the dish, blow gently down the short tube, and the syphon immediately commences to act, and continues to do so while there is any solution to supply it; and if care is taken to stop it before the top of the solution reaches the level of the syphon tube (which may be done at any time by pressing the piece of india-rubber tube), no serum will ever get into the dish.'

"*Gum Camphor Solution.*—When the bath is very much discoloured, this rectifier is most generally used. It is made as follows:—

Gum camphor ... ..	1 ounce
Alcohol, 95 per cent. ... ..	6 ounces.

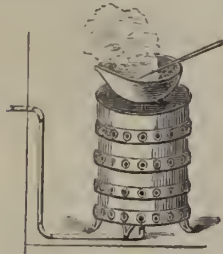
Add about four drachms of this solution to the discoloured bath, and shake well. Probably the frothiness which is at first formed will disappear, and then it will be necessary to add another equal quantity, if not more; shake well, and then allow the bottle to stand for a few minutes without being shaken. Filter the solution through paper, and the albumen, which, united with the camphor, will be left in the filter, and the bath will be very clear.

"*Boiling down the Solution.*—About once a month or so the printing bath should be boiled down about two-thirds. It is first made very alkaline with aqua ammonia, and is then placed in an evaporating dish over a small gas stove,



and a small jet of gas turned on. When it has boiled down two-thirds, turn off the gas, and permit the solution to cool gradually, leaving the dish on the stove in the meantime. When cool, filter through paper, and test the strength of the silver by means of Pile's test tube\* and solution. Add water to reduce the bath to that strength which is best for the paper, negatives, &c. Then add the other nitrates (or whatever other chemicals that might have been used in the making of the bath in the first place) to the bath, see to the alkalinity, filter, and the bath will be ready for use.

**"Fusing the Bath."**—Place the bath in a suitable size evaporating dish, and boil down to dryness at a gentle



heat. Scrape the silver which has adhered to the sides of the dish down to the bottom, and stir the solution with a glass rod until all the bubbling has ceased. Now turn off the gas jet, and stir the mass constantly with a glass rod until it has cooled, and then the mass will be broken up, which is a more desirable state to have it in. In an hour or so after you have left off stirring it, you can dilute the

strength of the fused mass by the addition of pure water. Reduce to the proper strength for the printing bath, and then filter the solution. The organic matter will be left in the filter. Now make up your bath as has before been advised, and then it is ready for use.

**"Sunning the Bath."**—The bath is made alkaline and placed out in the sunlight, for the purpose of throwing down the organic matter in it.

"The bath is very much improved by sunning, and it should always be placed out in the light when not in use.

"To prevent evaporation, keep the bottle tightly closed.

**"Filtering the Bath."**—This can be done either by means of common filtering-paper, or through cotton.

"Good filtering-paper can be obtained from almost any stockdealer, of various sizes, all prepared for immediate use. Sometimes the filtering-paper is rendered useless on account of there being traces of hyposulphite of soda in it; but this is very seldom the case. If you have filtering-paper of which you are suspicious, you can test it by the following simple method:—Take a sheet of the suspected lot of paper, and place it in a small and perfectly clean evaporating dish in which there has been placed a small quantity of warm distilled water—say five ounces. Cover the dish over with a glass, and let the paper soak for a few hours, and then boil the water, still with the paper in it, for the space of half an hour. Take a clean test-tube, and squeeze about an ounce of the water from the wet paper into it. This should be done with perfectly clean hands. Now dissolve about five grains of permanganate of potash in about an ounce of distilled water, and then add ten grains of bicarbonate of soda to it. When this solution is thoroughly dissolved and mixed, then let fall about three drops of it into the test-tube containing the water squeezed from the filtering-paper. If there is a trace of the hyposulphite in the water, the liquid in the test-tube will turn a more or less greenish tint, according to the quantity of the soda there may be in the solution. Look sharp. If there be no hyposulphite there, the rich colour of the test solution will not be lost, although its deepness may be weakened. When the latter is the case, the filtering-paper does not have anything in its composition that will be at all injurious to the bath when filtered through it.

"When preparing to filter your bath solution through paper, the paper should be folded in six or eight places, so as to permit the air from the bottle to escape between the folds of the paper, and thus allowing the solution to filter quicker. In folding, be careful that you do not

break the centre of the sheet of filtering-paper, at which the folds meet.

"The paper should be placed in the funnel, and when the solution is poured into it to be filtered, it should be poured at the side of it, slowly at first, so that the weight of the solution will not be likely to break the filter.

"When it is desired to filter the bath through cotton, the cotton should be wet thoroughly with good common alcohol, and thrown into the funnel. Now pour the solution in, and filter the bath.

"If it filters too quickly—i. e., imperfectly—then press the cotton down further in the neck of the funnel; if too slowly, then place the glass rod in the centre of the filter, turn it round once or twice, so as to catch hold of the cotton, and then pull it up very slightly."

## Notes and Queries.

IN conformity with numerous suggestions, we resume the plan of setting aside a column in the NEWS to be devoted to NOTES and QUERIES, to consist of questions and answers, or statements of difficulties and their solutions. We invite all who have difficulties or abnormal experiences, to state them clearly and concisely, and we shall be glad to receive solutions, suggestions, or notes from all whose experience may enable them to throw light on the subjects under discussion. This is a department entirely for our correspondents, and distinct in its aim and conduct from the Editorial Answers to Correspondents, which will be confined to their own column. One of the most distinguished art photographers in the profession opens the department with a photographic "conundrum."

### A PHOTOGRAPHIC CONUNDRUM.

SIR.—A lady and three gentlemen wanted to be taken together. You will see my position better if I describe how I disposed of the figures in group I had to compose. I first proposed to the lady to sit at one end of a small work-table, and to direct her attention to the gentleman I asked to sit at the opposite end—full of attention. Nearly behind the lady, her son, resting both hands on the table, leaned diagonally towards the gentleman with an enquiring look. Behind, but well seen, stood gentleman No. 3, forming the apex of the group. But I could not get him at all in tolerable focus (I did not mind him being slightly out); so I had another glass prepared. Now I took the group. All were good except No. 3, whom I now took by himself in the same pose, to be exchanged in printing with the blurred one. Now for the conundrum:—Oughtn't I to have shortened the camera (i. e., brought the lens nearer to the ground glass), or should I have pushed the camera nearer the object for the focus? O. G. R.

### THE TEXTURE OF HAIR IN ENLARGEMENT.

SIR.—I have photographed a fine glossy, flossy beard, fine in focus, and no movement. On having it enlarged—head and beard—the latter is rosy—coarse—not even like horsehair. What is the reason? ARTIST.

### MR. TILLEY'S SECRET.

BY W. T. BOVEY.

A COMMUNICATION from the above-named gentleman, recently published in the pages of the NEWS, presents an unmistakable indication that the secret possessed by the writer, in connection with combination printing, is to be made a subject of patent. My friendly advice in the matter is summed up in that cautionary word, "Don't!" The invention might contain the desirable elements of novelty, and cleverness added to boot, but there are so many ways of doing it, that the advantage of legal protection will be neutralized by an actual loss. I have clearly shown one way by which such work might be done, and now I give two more suggestions, which Mr. Tilley would do well to consider ere he purchases honours, and inflicts upon

\* Hart's testing apparatus will meet the case for English printers.—Ed. P. N.



himself the worry and anxiety which belong to every one who becomes a patentee.

The work of combination can be accomplished by an adoption of any of the old methods published. The trouble might be greater, but the cost of liberty to work them is absolute *nil*. And, after all, what more easily accomplished than success by new means? Supposing we cut a piece of tracing paper the exact size of negative, place these in juxtaposition, and, by the guidance of transmitted light, paint in the outlines of the figures; fill in the centres with opaque pigments, and the tracing paper becomes virtually a mask, which, attached to the view negative, leaves only to be carefully executed a print of the figure subjects on ordinary albumenized paper, cut exactly the size of negative. As with the tracing-paper before treated, adjust the albumen print edge to edge on the mask, and, if this last is properly painted, the figures, without any special attention to them, will be effectually protected from light.

Or a print might be taken on thin salted paper from the figure negative, and this converted into a mask. If desired to be made transparent in the unblocked-out parts, alcohol, with as much castor oil as it can dissolve without showing symptoms of oiliness, will answer the purpose required. The whites and lights above the deeper middle tints would, of course, require painting out. Place this mask on the negative, and proceed as per instructions just presented.

### ALBUMEN AS A SUBSTRATUM.

BY R. M. S., M.D.

THERE is, I fear, no royal road in photography. From the glowing accounts in many of the back numbers of the NEWS of the advantages of an albumen substratum, I was induced to "go in for it." The result, after frequent and patient trial, was disorganization of the nitrate bath; that system was, therefore, abandoned.

Unfortunately, I cannot suggest any panacea for that great evil to photographers, a dirty plate; but after a variety of experiments I have found the plan proposed by Mr. Tunny, of Edinburgh, in the NEWS ALMANAC of this year, of immersing plates in nitric acid one part, and water ten or eleven parts, most effectual; and finally rubbing them on both sides with a few drops of tincture of iodine and strong ammonia, such as I last year published in your columns for removing stains from the hands, and polishing with a clean tuft of cotton.

Immersing plates in boiling washing soda certainly removes the varnish; but I look upon it as a fatal error: the plates so treated are often so irretrievably stained that no after labour will obliterate the marks. Mr. Keith's (of Liverpool) plan of immersing them in nitric acid one part, and methylated spirits of wine seven parts, is, on the other hand, a great success. In a very short time the plate is completely relieved of the varnish, and the trouble of after polishing reduced to a minimum. Mr. Tunny, in the article referred to, advised certain proportions of gelatine, ammonia, alcohol, and water as a substratum and substitute for albumen, believing them to be without risk to the bath. My experience has not been so fortunate, for already by their use I have rendered these baths, for the present, unserviceable.

The notion of preparing at once a whole boxful of plates, that should be ready at a moment's notice, was so tempting that, old hand as I am, I was seduced by the recommendation of so practised and able an expert as Mr. Tunny to venture upon a sea of troubles. The first two or three plates were all I could desire; but, alas! each subsequent plate showed signs of deterioration, till at length universal fog settled hopelessly over each future attempt, and the bath, under sun treatment and boiling, threw down a black precipitate of organic matter, and gave an infinity of trouble to restore it to anything like working order. So

that I am now compelled to return to all the labour of cleaning my plates as in former days.

The cause of my failure is possibly due to some blundering of mine, but I began with a faultless bath, and ended as I have described. I merely give my own experience for the benefit of my brother photographers, as a clean plate is the first *sine qua non* for successful work, either in the studio or field.

Mr. Tunny courteously replied to my request for further information on the subject than that supplied in his article in the NEWS ALMANAC, and advised a further addition of nitric acid; but I did not find that mend matters much, if at all.

I observe that a gentleman has lately been in trouble about his camera and tripod, and hinted the advisability of applying india-rubber rings to the tripod to save the bottom of his camera from injury. For each of my tripods I have a small square of clamped mahogany, about one-third of an inch thick, which I attach to my tripod with an ordinary thumb-screw, and on this I screw my camera, which effectually preserves it from friction, and enables me to secure any amount of rigidity I require.

### ALBUMENIZED PAPER.

BY W. T. BOVEY.

PENDING more exhaustive comments, which I shall shortly offer, on this subject, I now briefly direct attention to a most curious fact. The price of the raw material is going upwards. The cost of albumenized paper, in sympathy with photographers generally, continues to go down—down to that starvation point which, reached, drives the unlucky producer into other and more profitable fields of industry. More singular still is the troublesome fact, that as the prices of the raw Saxe and Rives papers move upwards, so, in proportion, does their quality decline and deteriorate. The Saxe papers, from a delicate tint of pleasant blue, are now turned out an unsightly brown, indicating that they are not now manufactured entirely from linen.

The Rives papers still maintain their purity of colour, 'tis true, but those abominable metal spots, always so prevalent, are now supplemented with little imperfections that, unseen till too late to be remedied, grow into great abominations whilst the prints are being subjected to the process of fixing.

There are many other circumstances attending this question that demand a full consideration. At present, however, I may only beg your readers to suspend their half-formed opinions until they have placed before them whole facts.

### RECENT RESEARCHES IN PHOTOGRAPHY

BY M. R. MELDOLA.\*

A SUBSTANTIAL contribution has been recently made to our knowledge of the action of light upon silver salts—a contribution which we cannot but consider as of the highest importance to photography, both as a science and as an art.

In the autumn of last year Dr. Herman Vogel announced,† as the result of some experiments that he had been making, that "we are in a position to render bromide of silver sensitive for any colour we choose—that is to say, to heighten for particular colours the sensibility it was originally endowed with." This discovery is such a decided advance that it will be interesting to trace it from the beginning. Dr. Vogel, in the first instance, found to his astonishment that some dry bromide plates prepared by Col. Stuart Wortley in this country were more sensitive to the green than to the blue portions of the spectrum. This result was so totally opposed to the generally received notions that the subject was submitted to further examination. In the next experiments a comparison was instituted between dry

\* *Nature*.

† *Poggendorff's Annalen*, vol. cl, p. 453.



bromide plates, and the same plates when wet from the bath solution of silver nitrate. The results showed a decided difference in the behaviour of the plates. The sensibility of dry bromide plates appears to extend to a greater extent into the least refrangible end of the spectrum than is the case with wet plates. In Dr. Vogel's plates, in fact, which received the spectrum formed by the battery of prisms of a direct vision spectroscop from a ray of sunlight reflected from a heliostat, and passing through a slit 0.25 mm. wide, the photographic impression of the spectrum, when developed by an acid developer, extended in the case of the dry plates into the orange, but with wet plates not quite into the yellow. The bromide plates prepared by Vogel, moreover, did not exhibit that increased sensitiveness for the green rays which characterised Col. Stuart Wortley's plates, and this led the German investigator to conjecture that the latter plates contained some substance which absorbed the green to a greater extent than the blue. To test this conclusion, one of the plates was washed in alcohol and water, in order to remove the yellow colouring matter with which the plate was coated, and it was then found to have lost, in accordance with Dr. Vogel's anticipations, its sensitiveness for the green rays. The peculiar action of the Wortley dry plates was thus shown to be due to the coating of colouring matter, and the next step made by Vogel was to seek some substance which especially absorbed in the yellow, and at the same time acted as a sensitiser by fixing the free bromine liberated by the action of light upon the silver bromide. Both these ends are fulfilled by the coal-tar colour known as coralline. A plate dyed with this substance and exposed to the spectrum exhibited two maxima of photographic action, one the ordinary maximum in the indigo (near G), and the other, almost as strong, in the yellow, thus affording complete confirmation of Dr. Vogel's views. Aniline green\* was next tried. This dye is stated to absorb the red rays, and a corresponding increase of sensitiveness for the red rays was observed, the photograph again presenting two maxima of activity, the one in indigo, and one in the red, coinciding in position with the absorption band of the dye. Thus Dr. Vogel's results may be summarised by saying that a dyed film of silver bromide exhibits maxima of sensitiveness in those regions where the colouring matter exerts its maximum of absorptive power; but the precise conditions under which these results can be obtained must be considered at present as unknown, since many observers, in repeating the experiments (among others Dr. Van Monkhoven†) have failed to obtain other than negative results.

In a communication made to the French Academy on the 27th of last month, however, the well-known physicist, M. Edm. Becquerel, stated that some experiments made at his instigation by M. Deshaies at the Conservatoire des Arts et Métiers had been productive of positive effects, and that some of Dr. Vogel's results with coralline and aniline green had been reproduced. M. Becquerel, however, does not confine himself to bromide films; similar results have been obtained by iodised collodion in which coralline was dissolved. A most remarkable action was observed also in the case of chlorophyll when this substance was used as a tinctorial agent. Although the collodion possessed only a faint green colour from the dissolved chlorophyll, the spectral image was of a much greater length than when plain collodion was used. Under these last circumstances the spectrum extended from the ultra-violet to between G and F, with the usual maximum of action near G, while with chlorophyll the region of strongest action extended from the ultra-violet to the line E in the green, and at the same time a weaker but yet distinct impression extended from E to beyond B in the red, with a strong band between C and D. By a close examination of the spectral image a second band of less intensity could be detected on the least refrangible side

of the band between C and D, and other still weaker bands appeared in the green. The most striking confirmation of Vogel's results is to be found in the fact, observed by M. Becquerel, that the band between C and D corresponds in position with the characteristic band of the absorption spectrum of chlorophyll dissolved in collodion. The same results were obtained by M. Becquerel with every plate tried, and with collodions containing different quantities of chlorophyll.

It must be admitted, then, that a film exerting selective absorption in intimate contact with a sensitive film of silver bromide or iodide affects the latter in those parts of the spectrum where the selective action is taking place. Here surely is a wide field for investigation, and one the importance of which will be at once obvious to the physicist. Practically also, when the precise conditions of action are made known, valuable results may be anticipated from the application of this principle to science and to art. Since the year 1842, when M. Becquerel photographed the whole solar spectrum from the extreme violet to the extreme red, and when Dr. J. W. Draper photographed the violet, blue, and extreme red, no successful attempts have been made to imprint the least refrangible end of the spectrum; and this, when we consider the great importance that the study of the solar spectrum has assumed of late years, and the painful or even dangerous character of prolonged eye observation, is to us a matter of wonder. M. Becquerel's result, it will be remembered, was obtained by a film of silver iodide, first insulated or exposed to diffused light, and then to the action of the spectrum. Here again is another question—the precise action of insolation on sensitive plates—demanding explanation at the hands of the physicist. The practical aspect of Dr. Vogel's discovery need not here be discussed at length. Attention may be called to the well-known difficulty of getting reds or yellows to imprint themselves in portraiture, a difficulty which now bids fair to be overcome.

Then, again, in what we must consider as a higher sphere of practical utility, great advantage to the study of solar physics is likely to accrue. In point of fact, the photographic method of comparing spectra described in a recent communication to the Royal Society now becomes available for the whole extent of the solar spectrum, and our knowledge of the true composition of the sun will be thus in course of time recorded permanently on "that retina which never forgets."

Great results have already been achieved by photography, and greater may be looked for. It must not be forgotten that in this most interesting branch of chemical physics we are in a period either of provisional hypothesis, or, worse still, of no hypothesis at all, so that valuable additions to our knowledge of physical and chemical laws should be forthcoming. The changes wrought by a beam of light on sensitive surfaces are sometimes physical and sometimes chemical. We may appropriately recall here the fact that mechanical pressure upon a sensitized surface of a silver salt acts in the same manner as a ray of light, giving a dark stain under the action of reducing agents. The experiment of Grove also, in which an electric current is set up by the incidence of a beam of light upon a prepared Daguerreotype plate, should not be forgotten. The equivalence between light and the other form of force has not yet been established, and it may not be going too far to conjecture that thermodynamics may possibly in the future have to appeal to the action of light upon a photographic plate. In the meantime we look forward to the promised continuation of Dr. Vogel's researches with no little hope.

## Correspondence.

### WOODEN BATHS.

SIR,—Should you think the following of sufficient interest for inserting, perhaps it may interest your readers. My trade is that of a carpenter and joiner, but I have

\* The green referred to is probably that known as "aldehyde green." The so-called "iodine green," as I have frequently observed, *transmits* a band in the red.

† *Photographic Journal*, No. 25, June 20, 1874.



followed photography as an amateur for eight years—at times altogether. Having to go to different parts of the country, I take my photo things with me, and very often get several breakages. A short time back, I had a large glass bath broken, although in case and packed carefully, so thought I would make a wooden one, and try it. I have given it a month's trial, and it seems to answer very well indeed. I made it for 12 by 10 plates.

Get two pieces of wood fifteen and a-half inches long, sinking the front three-eighths of an inch at the edge, and five-eighths of an inch at centre. The back I sink three-eighths of an inch, level through—that is twelve inches front, the same leaving one and three-quarter inches each side. The back of bath I sink again six inches wide, one-eighth of an inch sunk down for dipper. The dipper I make one-eighth and one-sixteenth thick, so that the plate clears the back of bath. The dipper is halved together, and fastened with wooden pegs. At the centre of dipper I fasten a strip of india-rubber, to lift dipper out; this will bend down for lid to lay in its place.

I put piece of india-rubber between front and back of bath, then screw them both together. After back and front are fastened together, I place another piece of india-rubber on the bottom of bath, and screw on wooden bottom. When that is fastened on, I tongue the sides of bath; then make a clamp fasten on to them. When this is clamped on, I get strips of wood one and three-quarter inches wide by three-eighths thick, and screw on with small screws over the joint of clamp, this also forming front and back of bath into a panel. I then make a light frame to fit into back of bath, inside the border that forms the panel level with it—namely, three-eighths of an inch thick. When opened out, this forms a stand for the bath; when not in use, shut it up, with a small brass or wood button to keep it in its place. The border on top of bath I let stand up five-eighths of an inch to receive lid of bath. The lid of bath does not go further than the clamp. The clamped end runs up to the top of border. I fasten a piece of india-rubber on lid. Make a seven-eighths of an inch round rod to carry it with. Through the rod I have two thumb-screws, screwing its clamped end with two small springs on lid of bath, or, better still, two corks fastened to handle. The bottom of dipper will want to be three-eighths of an inch thick, or nearly so, to receive glass plate. The dipper answers well, keeping the plate steady in bath.

Two or three years ago, a correspondent of your paper wrote and said how he made a dipper with a stick out of the hedge, for a make-shift. After I saw that, having broken two or three glass ones, I made two wooden ones, and have had them in use till now. Adopted my present plan because of floating on the bath.

I have made my own varnish for some years—shellac and spirit—only I made some thicker, and gave this wood several coatings. Every joint was put together with it, save the india-rubber ones. I make my own camera stand, printing presses, &c.

G. M.

## Talk in the Studio.

**SOUTH LONDON OUT-DOOR MEETING.**—The out-door meeting of the South London Society will be held, on Saturday, at Kingston-on-Thames, and Mr. S. Fry has generously offered to entertain the members at his residence at Surbiton Park Terrace, where his newly arranged landscape studio will be open to inspection.

**IRON SALT SENSITIVE TO LIGHT.**—It may be worth while to call the attention of our readers to a detail which might otherwise be overlooked. In Mr. Watson's article on the "Developer," in our last, he mentions the fact that he has found tartrate of iron sensitive to light.

**THE ILLUSTRATION COMPANY.**—A company with a view to protect all engaged in the pictorial arts from the constant

piratical raids made on their works is in course of formation. We shall have something to say on the subject in our next.

**GOVERNMENT PHOTOGRAPHY IN AMERICA.**—The *New York Nation* says:—"The addition of a photographer, supplied with suitable apparatus, is now considered indispensable to all Government expeditions of the first class, and the number of negatives accumulated in Washington as the result of the labours of Prof. Hayden, Lieut. Wheeler, Major Powell, Clarence King, Commodore Solfridge, Commander Lull, the United States Fish Commission, &c., has become really enormous. Many of these are 11x14 inches in dimension, and some of smaller size; while the stereoscopic views are almost countless. The peculiarities of a country and of its human and other inhabitants can thus be exhibited in a very satisfactory manner, and the whole forms a series of illustrations of wonderful interest. It is greatly to be regretted that no provision is made by Government for the publication of these pictures, so that they may be acquired by those who wish for them at a reasonable price. They are now to be had only by special favour of the heads of the departments, and a complete series cannot be obtained without great difficulty. A few sets might be distributed gratuitously to public institutions, others sold singly or collectively to individuals, at cost price. It is quite safe to say that the series of large plates amounts to over a thousand, while of stereoscopic pictures there are two or three times that number."

**CLEANING VARNISHED PLATES.**—Mr. C. A. Palmer, in our *Philadelphia contemporary*, says:—"I have seen many ways of cleaning off varnished negatives, but of course like my way best; and as I have never found any one using it, only as I have taught it to them, I will give it for the benefit of all. I proceed as follows:—I take my varnished negative and pour on it a little concentrated ammonia, rubbing it well over the surface; then, setting it in a level place, pour a little more on the centre of the plate, and prepare another the same way; then lay the varnished sides together, and serve another pair the same way; continue so doing till I have a dozen or two in the pile. Then set a weight on top and let them lay an hour or so, when the film will easily come off, and, after thorough rinsing, the plates are ready for albumenizing. I cleaned and albumenized fifty quarter glasses in a little over an hour a short time since. It is much the quickest, and I think the cleanest, method I have ever seen published."

**TRANSPARENT PARCHMENT AS A SUBSTITUTE FOR WINDOW-GLASS.**—According to M. d'Argy, of Paris, it is possible to render parchment sufficiently waterproof, and, at the same time, translucent, that it will become a substitute for glass. A design may be produced on the parchment by means of paint, photography, or chromo-lithography, or the sheet may be simply stained of any desired tint. One or more coats of waterproof and translucent varnish, or composition, applied carefully, protect the design, and render the parchment diaphanous. M. d'Argy asserts that in this manner an article may be produced adapted to all the various uses of window-glass, and capable, from its elasticity, of withstanding blows which would destroy glass. Unfortunately, however, he does not supply the name of the varnish which will render the parchment transparent, and as he does not intend to proceed any further than provisional protection, I suppose he has given up all hope of making a marketable article. But if it could be done, there are many circumstances in which painted parchment windows would be serviceable. Can any of your readers help with suggestions?—*English Mechanic*.

**SCIENTIFIC INVESTIGATION ON PHOTOGRAPHY.**—A writer in *Nature* says:—"On consulting books on practical photography, any one who pretends to any knowledge of chemical science cannot fail to be struck by the empiricism of the various formulae proposed, and a feeling akin to regret is experienced on reflecting that this fascinating and useful art has reached its present state of perfection by processes which have been essentially methods of trial and error. The large number of practitioners, both professional and amateur, now engaged with this subject ought surely to produce from their ranks investigators willing, as we know they are able, to take up the purely scientific aspect of the subject. The harvest reaped by such an investigator would surely repay him, for we are of opinion that in the theory of the sensitive film lie hid some of the fundamental truths of molecular physics."

**SENSITIZING GELATINE PAPER.**—This is accomplished in a solution of one part bichromate of potash in twenty parts of water. The purer the bichromate salt the better the paper.



If small sheets of eighteen to twenty square inches are to be sensitized, the above solution is poured into a zinc or porcelain dish, the bottom of which should be covered to the depth of half an inch at least. The gelatine paper is dipped into the solution and left there until it gets soft, which generally takes thirty to forty seconds. It is then taken out and laid, gelatine side down, on a well cleaned glass plate. By rubbing with a piece of india-rubber, not too hard, the greater part of the liquid is removed from the paper. On lifting the paper from the glass, it has a fine, smooth surface, on which there will be no streaks or drops formed afterward, as it is already half dry. It is then hung, on laths provided with pegs, to dry. Thus prepared, it will bear a much higher temperature than when the solution is not pressed out. In cold weather, the paper can remain some minutes in the chromate bath; it should be left there until soft and pliable. In preparing large sheets, another method must be employed. A sufficient number of thin strips of pine wood, three-fourths of an inch wide and long enough to rest on the opposite side of the dish, are saturated with shellac varnish, and, when dry, rubbed with cocoa butter, and then polished with an old linen rag. Horizontal sticks are put up in the preparation room with notches to receive these strips. The dish for a large chromate bath is best made of stout zinc. A sheet of gelatine paper is allowed to float on the bath, gelatine side down, until soft, when one end is lifted up and laid on one of the pine strips; another strip is laid on the paper, and the two clamped together. The paper is then drawn, face down, over a glass rod or tube fastened to one side of the dish. In this way small air-bubbles are removed, as well as a large portion of the solution. The paper is now hung up by placing the strips of wood clamped to it in the notches on the horizontal sticks. A third strip is pressed gently against the back of the paper just below the others, and drawn down to the lower edge, thus partially removing the solution from the back. It is then clamped to the lower edge. In this manner, says the *Photographische Archiv*, a sheet of paper five feet long may be sensitized in less time than it takes to describe it. The chromate bath should be kept covered to keep out the dust; and before using it, a piece of blotting-paper may be drawn over the surface.—*Scientific American*.

**RETOUCHING AT NIGHT.**—Fr. Wendling says:—"Doubtless many photographers have tried to use artificial light for retouching the negative; but it seems without result. I never read or heard of success. I have made, also, different efforts in that way; but in the last winter, before Christmas time, work pressed me to make another experiment. I tried a petroleum lamp, with round burner, and fastened to it—in order to secure a stronger light, and parallel beams—the parabolic mirror of my magnesium lamp. I gained an intense light, to be sure; but, on retouching, I felt my eyes very much affected, not being able to work long. Now, I remembered that once a watchmaker told me he was able to work easily in the evening since he employed the light blue glass (called optical glass), and I followed him in using that material. The effect was excellent, and since, I have retouched a great number of negatives, in the winter past, at night. As the parabolic (or spherical) mirror concentrates also the heat-beams, it would, perhaps, be an improvement to use, instead of the blue glass, a "cuvette," containing a solution of sulphate of copper with ammonia, or Prussian blue dissolved in oxalic acid. I think, if you publish this, that the apparatus will, in a short time, be in every photographer's hands, because it is a welcome requisite, although it may be considered both tough and very simple—a very egg of Columbus.—*Philadelphia Photographer*.

## To Correspondents.

**BREAKWATER.**—The cause of your cards being peppered with small spots is very manifest. We have pointed it out very many times lately. The spots are due to the particles of bronze powder from the "gilt" printing at the back of your cards becoming detached, and resting on the face of the print. This so-called gold printing is effected with a bronze powder containing sulphide of tin, and each particle resting on the print produces a spot of sulphide of silver. You should banish all the cards so printed from your establishment straightway.

**G. TROUTNECK.**—We regret that we are unable to recommend any one for the purpose.

**H. C. C.**—Your negative reached us in a thousand fragments, the small troublesome spicula of which still hang about the cloth covering of our writing table. Negatives to be sent by post should always be placed in a wooden box sufficiently strong to resist the pressure of stamping and other rough usage of transit. Cardboard or millboard at each side of a plate of glass is simply useless for postal transit. We can form but little idea from the broken fragments of the negative of the precise trouble, but, so far as we can judge from small pieces and your description, the trouble is a metallic silvery deposit in the shadows, under, rather than upon, the film. Such a deposit is generally the result of using a damp or dirty plate, and the best remedy is precision in this respect. Of course other conditions will conduce to the production of the result, a nitrate bath charged with organic matter materially tending in that direction. Sunning the bath, or treating with permanganate, as we have repeatedly described in our *YEAR-BOOK*, will rectify the bath.

**SIDE-LIGHT.**—We cannot, of course, explain what the author means, any further than he has explained himself, especially as we have not the work at hand for immediate reference. In the case to which you refer, we presume that the background is placed in a diagonal position across one corner of the room, and the camera directly, or nearly, opposite to it at the other corner. In this case, a sitter, with back to the side-light, together with background, could be included by the camera. 2. The mode of treating a bath to which you refer has not been found to answer in practice generally, nor to possess the advantages claimed for it.

**IL TALISMANO.**—The white line round the figure in double printing, with Edwards' printing frame, may arise from several causes. The mask may be imperfectly cut out, or it may be imperfectly adjusted, or the frame may be a little out of order, and so not secure perfect register.

**AMATEUR.**—Bichloride of palladium is generally sold in concentrated solution of uncertain strength. When we have used it we have diluted this concentrated solution until it was the colour of pale sherry when required weak, and of brown sherry when required strong. As the salt is not usually met with in crystals, we cannot give you more precise information, or state the number of grains to the ounce required by a solution.

**SOUTH DEVON.**—You would not find white of egg a good substance for mounting prints; it has not body enough, and is not sufficiently tenacious. Even if it had the proper adhesive qualities, it would not be wise to use it, as it contains sulphur.

**JOHN REAY.**—You do not state what kind of hints you require on the construction of a glass room. The dimensions you mention are pretty good, but we should have preferred it a foot or two longer and a foot or two narrower. You do not state whether it is to be lean-to or ridge-roof. If you can have either, and there is an open expanse on both sides, a ridge-roof will possess advantages. If only north light is unobstructed, then select the lean-to form, the side-light facing north. Keep the eaves low—six or seven feet will be ample—whilst the highest part may run up to twelve or fourteen feet. About six feet at each end of side and roof opaque, the remainder glass. Glass on side to within twenty or twenty-four inches of ground.

**P. S.**—There are a variety of methods of dealing with a varnished negative which has been insufficiently intensified. You may remove the varnish by repeated washing with alcohol, and then using pyrogallie acid and silver dissolved in spirits of wine instead of water to intensify. But this is a somewhat troublesome method. The simplest plan, and, in our hands, the most satisfactory, consists in moistening the varnished surface with alcohol, and then applying tincture of iodine, made by dissolving six or eight grains of iodine in an ounce of alcohol. This is applied to the varnished surface. In a few seconds the image assumes a deep olive tint, very non-actinic, and capital for printing purposes. As soon as this tint is secured, the negative is rinsed with alcohol, and dried by the fire, and is again ready for printing. Care should be taken to stop the action of the iodine at the right point, as if it is allowed to go on, the negative becomes a pale, feeble yellow, which easily transmits light, and the negative may, in such case, be found actually weaker than before.

**QUERY.**—The dish containing the water into which the prints were placed has been contaminated with hyposulphite. No other cause, that we know of, except the action of hyposulphite, in this or some similar manner, would have caused similar stains.

**T. S.**—We do not remember the recipe in question. Our correspondent had better obtain all the numbers he has lost, and so secure the one required amongst the rest.

**C. J. E.**—Thanks. In our next.

**A PRINTER** writes to endorse Mr. Hooper's letter in our last; but he does not add any fresh information, hence it is not necessary to print his letter.

**THE STATUS OF PHOTOGRAPHY.**—We have received a letter on this subject without any signature; which will, however, appear in our next.

Several Correspondents in our next.



## The Photographic News, August 28, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### GLASS POSITIVES VERSUS PAPER PRINTS.—NEW USES OF PHOTOGRAPHY.—PRINTING BLOCKS OF CARBON TISSUE.

*Glass Positives versus Paper Prints.*—The question has often been mooted whether we have not lost much by discontinuing to employ the Daguerreotype process for portraiture. The Daguerreotype pictures of a quarter of a century ago were often far more delicate and faithful representations of personages than the carte-de-visite pictures of to-day, and it is very certain that, so far as scientific records are concerned, such as it is important shall not dilate or contract after depiction upon the sensitive film, the reception of the image upon a rigid silver plate is by far the most reliable method we have. Glass positives, like Daguerreotypes, are also, we fear, rapidly becoming things of the past, and this is also a fact to be regretted. Any one taking up an album in a humble household in some little country district, and comparing the vulgar black-and-white pictures therein with the glass positives that hang around the walls, cannot fail to be struck by the vast superiority of the latter, which are softer and more detailed than the common paper productions. The latter, it is true, have many advantages, but then they must be well executed. A photographer of modest capacities will produce far more presentable portraits by the positive collodion process than on paper, and this fact, coupled to the circumstance that the former are also more durable than the generality of albumenized prints, must not be lost sight of. The reason for this lies, however, less in the superiority of the glass positive than in the miserable character of the cartes-de-visite executed at some of our little market towns. Really, when the amount paid is but a few shillings per dozen, better work might be done than is performed by a large number of country photographers, who know very well what good pictures are, and how they are to be produced. We have constant discussions about raising the status of photography; but until there is a thorough *esprit de corps* throughout the profession, and an understanding to produce good and durable pictures, free from the commonest faults of photography, little can be done to raise the art to its proper position. So long as photographs are merely taken mechanically, and printed mechanically, without the exercise of taste, judgment, or skill, photographers will be considered as mere mechanicians, who employ their tools with more or less skill.

*New Uses of Photography.*—We are always happy to see new applications of our art, even if they occur in the minor bye-ways of industry or commerce. Our readers are tolerably familiar with the sheets of note-paper to be purchased at the country stationers, bearing on the front a lithographed view of some building or spot of interest in the neighbourhood, to be employed when sending a letter home from any district one may be visiting. Instead of these cuts you may now procure note and letter paper ornamented with photographs of landscapes and buildings; and these obviously form a much more pleasant souvenir than the coarse fancy sketches we have seen and despised so often. Another photographic novelty deserves mention. To attract visitors to various summer resorts, hotels often set up placards at railway stations and other public places making known the beauties of the neighbourhood. Cliffs of dazzling whiteness are surrounded by waves of azure blue, while in the neighbourhood is seen the famous hotel itself, a lofty and spacious building situated in the loveliest of grounds. Everybody has seen these enticing pictures, and has found reality scarcely equal to the fancy sketch placed before their eyes. Recently we have seen instances of these brilliant tableaux being superseded by modest photographs; and a frame of these are certainly more

encouraging to a tourist prospecting a visit to any district, than the blue and white paintings often exhibited. A waterfall, cascade, rocky defile, or broad lake is skilfully portrayed by means of the camera, and the result is a production in which everybody may have perfect confidence.

*Printing Blocks of Carbon Tissue.*—Printing with greasy ink from a carbon print can never be undertaken in the same way as when a film of bichromated gelatine only is employed. Several foreign processes have lately been made known, in which it is suggested to employ a sheet of pigmented tissue for producing the printing block in lieu of taking the trouble to prepare a mixture of bichromate of potash, or chrome alum and gelatine. The sensitive film is exposed to light under a cliché, and is then sponged and inked up with a roller to which printer's ink is attached, and it is stated that the ink will attach only to the solarized, or hardened, portions of the film. This is perfectly true, supposing there is no pigment in the film; but when carbon tissue is used, there is lamp-black all over the surface, and greasy ink, it will be found, will attach itself to the pigment, just as much before solarization as after; for naturally enough, whatever action the sun may exert upon the bichromated gelatine, it has none whatever upon a pigment such as lamp-black.

### FRENCH CORRESPONDENCE.

THE Academy of Sciences has lately received several communications interesting to photographers. Among these I may mention, first of all, a long and remarkable memoir of M. Edouard Becquerel, entitled "Action of rays of different refrangibility upon the iodide and bromide of silver: influence of coloured mediums." In this work the learned professor, to whom the photographer owes much useful teaching, gives an account of some ingenious researches upon the iodide and bromide of silver under various conditions; as upon the surface of a silver plate, as in the Daguerreotype process, or upon paper by double precipitation, or incorporated in collodion, or gelatine, and employed both in the wet and dry condition. Further, M. Becquerel passes in review the results obtained by Dr. Vogel, and explains the chemical phenomena produced by the presence of coloured matters mixed with bromised or iodised collodions. The importance of a memoir of this description, which includes all known up to the present day about these two salts, which form the basis of all photographic operations, cannot be overrated. As it is impossible for me to reproduce the entire paper, I merely allude to it here so as to bring it to your notice in case you may desire to print in *extenso* from the *Comptes Rendus* of the Academy.

M. Jules Girard has also communicated to the Academy an interesting photographic paper. For some time past M. Jules Girard has made happy application of photographic processes to microscopic study, and the work he published in 1870 under the title of "The Camera and the Microscope," will not be forgotten. The author, who has continued his useful work, exhibited, on Monday last, several photographic reproductions of different crystalline objects. Among other things, he has reproduced, and enlarged to twelve diameters, some crystals of sal-ammoniac and bichromate of potash, two substances in which photographers are obviously interested.

M. Girard, in describing his method of operating, commenced by declaring that it was best to work by means of transmitted light, if possible, supposing it is not too intense. He employs an apparatus composed of a metal plate fixed to a stand bearing the camera. This horizontal plate is formed of different pieces upon a winding screen, so that they can be shifted to and fro at the same time as the camera. Then upon the plate is fitted the lens, about a centimetre in diameter, combined so as to give an enlargement between eight to twelve diameters; secondly a spring pincers, to carry the object or the glass upon which the



salts are crystallized; thirdly, a strip of blue cobalt glass, to impart a favourable monochrome tint to the object; fourthly, a plane mirror, for reflecting, which, like all the rest, is moveable.

According to the transparency of the crystals, the period of exposure varies from a second to two or three minutes. To obtain greater relief, and to show the forms of the crystals, an oblique light is secured by inclining the mirror. Although the brilliant effects of polarized light appear of little use in photography, they allow, in certain instances, of showing the objects upon a black ground, so that their delicate details are better seen. The polarising apparatus is composed of two pieces, the polariser and the analyser, the first being placed in front of the object glass, the latter between the camera and the object glass.

When you want to operate, a little of the solution of salt is poured upon a strip of glass, and dried on a leveling-stand to get the crystals of uniform thickness. Solutions of different concentration should be tried.

Fibrine of blood dissolved in aqueous solution of sea salt presents certain characteristics which lead one to suppose it is a substance intermediate between albumen and caseine; by freeing the solution from the salt it contains, and concentrating it rapidly by distillation, *in vacuo*, at a temperature of 45° Cent. M. Armand Gautier has obtained a neutral substance which possesses most of the qualities of ordinary albumen, and, on analysis, it gives identical results. This albumenized substance from fibrine coagulates at a temperature of 61° Cent., whilst egg albumen only coagulates at 73°. A very singular circumstance M. Gautier mentions in connection with this substance, which has been confirmed by M. Beauchamp, another chemist, viz., that the white of egg contains, besides incoagulable matter, two distinct coagulable albumens, one of which coagulates at 60° or 63°, and the other at 71° or 74°. The albumenoid from fibrine is analogous to the albumen which coagulates at the lower temperature.

Medical men have already pointed out that the fibrine of very young animals, or of those weakened by bleeding, is easily soluble in warm water, forming a solution like white of egg. M. Wartz has also shown that on putrifying fibrine, a notable quantity of albumen is yielded.

It would be well to try the albumen of M. Gautier in photography, to see if it could be substituted for egg albumen with advantage; it would, of course, be much cheaper, because of the large quantity of blood always obtainable.

A painter who works at retouching in one of the principal photographic studios of Paris, and who has studied the question of mounting photographs, has succeeded in preparing a new and suitable material. The "Colle Ramie" is imperishable, very adhesive, and undergoes no chemical action. I am about to institute experiments with it, and will forward you a sample for a like purpose.

M. Leon Vidal perseveringly continues his polychrome researches, and I have lately received from him a further specimen, which is of a wonderful nature. It is a portrait of a consul-general in full uniform, measuring twenty-seven centimetres in length, with a head of four centimetres. The coat is green, richly embroidered in gold, and covered with decorations of enamel and silver, with ribbons of various colours. The trousers are white, with a gold stripe, and all the trappings are well executed, and the colours faithfully reproduced. The ornaments are wonderfully striking, and, altogether, the picture seems to be the production of a most skilful painter.

We learn that, not content with the practical results already obtained, M. Vidal is actively occupied in making his process applicable for printing with greasy ink. Instead of printing consecutively upon pellicles differently tinted, to be superposed afterwards, he produces monochromes on stone, in the same way as chromo-lithographs are obtained.

*L'Union Centrale des Beaux Arts appliques a l'Industrie,*

whose work was interrupted by the war, and which has now been re-established under the presidency of M. Guichard, has just opened its fourth exhibition at the Palais de l'Industrie. Photography takes an honourable place, and is represented by some beautiful enamels of M. le Comte de Roydeville, and MM. Gugenheim et Forest, and by some fine landscape and animal studies of MM. Quertier et Cie, Achille et Alexandre Quinet, Raphael, &c.

ERNEST LACAN.

## PHOTOGRAPHY IN CONNECTION WITH ASTRONOMY.

BY COLONEL STUART WORTLEY.\*

HAVING been asked by the Astronomer-Royal for some information in connection with photographic processes with a view to their being used for the transit of Venus, and having had the advantage of discussion of the various processes with my friend Captain Abney, who has been in charge of the transit photographic work, I made at various times during the past summer a number of experiments in solar photography, the result of which may possibly be of use to future workers in this branch of science.

Taking the ordinary commercial collodions manufactured for photographic processes, we are at once struck with the difficulty of getting accurate micrometrical measurements, in consequence of the varying amount of contraction and expansion possessed by the collodion film in its wet and dry states. To counteract this difficulty it is necessary to make the pyroxyline with the maximum of water added to the acids which they will bear without dissolving the cotton when immersed therein; and it is also desirable to reduce considerably the proportion of nitric acid to sulphuric, with the object of obtaining a film which shall neither contract nor expand when either wet or dry. By using such a pyroxyline I have been enabled to make a film on which the most delicate micrometrical measurements can be registered with absolute perfection.

The next point to be considered in connection with astronomical photography is the radiation and halation produced where the bright and dark parts of the picture meet. This appears to proceed from two different causes: one, which we may call "halation," being the reflection of light back from the glass that supports the film, into the film itself; and the other, which I will call "radiation," and which appears to be an action in the sensitive molecules of the film itself, and occurring no matter on what support the film may be laid. Halation from the first of these two causes can be prevented in two ways: one method being to place a dark pigment on the back of the glass plate, and in optical contact therewith; and the other, and far preferable one, to stain or dye the film itself with such an amount of orange or red colour as shall stop the rays of light from getting down to the glass and being thence reflected.

But the radiation which takes place in the film itself is much more difficult to subdue, cannot be subdued by mechanical means, and can only be subdued by the use of certain chemicals in the film, differing somewhat from those in use in the ordinary photographic processes.

Before pointing out what I consider the best means of avoiding this injurious halation, I will point out what I consider it to be, and why I consider it to be so. I think the radiation in photographic films, which is so unpleasantly apparent when a bright object is photographed in close proximity to a dark one, is due to what I may call a "creeping" of the superabundant light, which has done its work on the bright object, over and into the darker portions of the picture. To illustrate this argument the following fact in connection with dry-plate photography should be borne in mind:—If a landscape photograph consisting of trees and sky be taken in a bright and actinic

\* Read at the meeting of the British Association at Belfast.



light, and when a short exposure is, therefore, only necessary, there will be on a rapid dry plate but little radiation; but if the same view be taken in a dull light, and when the actinism is infinitely less, the longer exposure required will certainly produce a great amount of radiation from the sky over the trees. Now the sky, even in a dull light, would be impressed on the film tolerably rapidly, and the necessity for the long exposure is in order to get the detail in the darker parts of the picture, and the radiation is thus produced by the creeping of the superabundance of light that has already finished its work on the sky over the dark parts of the picture which require the prolonged exposure. That this "creeping of the light" does take place, the following experiment will, I think, show with certainty:—

In order to find out which of the salts of silver were least liable to give this radiation, I have experimented with a very large number of them, to which I will presently allude; and the following singular fact was discovered by me in connection with the chloride of silver, which salt has much more tendency to give radiation than any other that I have experimented with. I had found that a sensitive film which contained a chloride was always possessed of less satisfactory keeping qualities than one from which chloride is absent; and in course of some experiments on the various keeping qualities of plates between exposure and development, I came across the following singular fact:—A dry film containing a considerable quantity of chloride was, after exposure, put in half—one half developed immediately, and the other half put away in the dark for forty-eight hours. It was found that on the half of the plate that had been kept in the dark for forty-eight hours the "blurring," as it is called by photographers, was considerably greater than on the half plate that was developed at once; and on repeating the experiment several times I was enabled to convince myself that the action of radiation, or what I have called the "creeping of light," on to the dark parts of the picture continues after the film has been removed from the action of the light, and after it has been put away in the dark. I have noticed this with chloride of silver only, but I was thus led to investigate the behaviour of other salts of silver in connection with this radiation of light.

No photographic process gives such good and rapid dry plates as the one in which an emulsion is made of bromide of silver formed in the presence of a large excess of the nitrate of the metal; but when we use the bromide alone, it is unfortunately strongly addicted to the blurring before spoken of. We can, however, entirely counteract this tendency by the use of other salts of silver. I will not take up your time by going into very minute details on this point, but will merely say that I have found that the addition either of the malate, succinate, fluoride, or iodide of silver to the bromide will, if used in the proper proportion, give a sensitive film from which radiation shall be entirely absent, and that their suitability to the purpose is found in the order in which I have written their names; and with a film containing a large proportion of malate of silver I have been enabled to take subjects which it would be impossible to take by any other method, owing to their strong contrasts of black and white. It should also be noticed that these salts have a peculiar effect on the colour of the finished negative, the malate giving a golden brown, the succinate a red brown, the fluoride a pink, and the iodide a delicate green. It is also a great preventive of radiation to add nitrate of uranium to the emulsion; and, whatever other salts are used, this should never be omitted. I may also mention here that I have found these various salts to act in a remarkable manner in connection with the colours of the spectrum, and to give peculiar results in connection with some of the more difficult lines thereof.

There is one final point as to the obtaining of good astronomical photographs. It appears to me to be essential that they should be developed by the strong alkaline method

of development which was introduced by myself in the course of last year. It is impossible, with the old method of development to obtain results in any way as satisfactory as those obtained by my new method. Not only is there a very great increase of sensitiveness obtained, but the development is unusually certain and rapid; and where the sun has to be photographed it has a peculiar effect in giving the outer limb clear and sharp. Captain Abney has, after many experiments, decided on using my method of development for the dry plates used at the transit of Venus; the formula being a saturated solution of carbonate of ammonia with sufficient pyrogallie acid, and bromide of potassium if required.

## ON THE MULTIPLICATION OF MAPS AND PLANS IN THE FIELD.

BY CAPT. ABNEY, R.E., F.R.A.S., F.C.S.\*

OUR president has already remarked on the necessity of a military man knowing geography. I venture to think that topography is even more necessary. A very little thought will convince those of my hearers who have not hitherto considered the subject, that the more perfectly the officer commanding an army in the field knows the ground on which he is about to give battle to the enemy, the greater his chance, if not of securing victory, of at least making the best fight possible.

I will not take up time by enumerating instances; even recent autumn manoeuvre experiences may possibly occur to some of you. Now, for instance, the Prince of Wales, on the point of being taken prisoner, escaped by an intricate pathway across a bog, over which his enemy was afraid to follow him; and you can understand how a deep, unknown ditch may foil a charge of cavalry; and, in short, how, in a hundred ways, a good knowledge of the country is desirable, not only for the general in command, but for all the officers under him. Now this knowledge can, in but the very rarest instances, be what is called "personal" knowledge; and if it should happen that there is one officer in any army who is well acquainted with the field of battle, it is absolutely certain that but very few will, and they probably will not be the men who are best able to use that knowledge.

But if every officer can understand a map, and if a special map be made of the part of the country required to be known, and if this map can be multiplied so rapidly that within a few hours after it has been completed, a clear and intelligible copy can be put into every officer's hands, then we get as near as possible to the condition of perfect local knowledge throughout the army. And here I would remark that, though maps of civilized countries can be obtained, more or less accurate, yet they are necessarily on a very small scale, and a map, however good, on a scale of ten miles to an inch, cannot possibly show, for instance, such a wall as helped us to win the battle of Marston.

The Prussians, with that forethought which so entirely distinguishes their War Office, went to war with France thoroughly prepared, with maps revised to the latest moment—so, at least, it is said—and it is not known whether they had to resort, on any large scale, to the operations of what we term "*reconnaissances*," but they invariably made the officer in charge of any post map out roughly the country close round it, as a guide to the generals, in regard to local details. I will, however, exhibit such a piece of *reconnaissance*, such as the officers of the Royal Engineers are taught to make; and when I tell you that we have at present in the army systems by which this kind of work can be multiplied at the rate of one hundred an hour in the field, you will see that at least we have made some advance since the time when all the officers of the Engineers were kept up all night, copying by hand

\* Read at the meeting of the British Association at Belfast.



the rough sketch, almost from memory, which guided Sir Colin Campbell into Lucknow at his relief; or, again, since the time when the Duke of Wellington was able to take his army across the stream which runs past Tarego, from a sketch taken by an Engineer officer while at full gallop. In the hope that a more precise description of the method employed may be interesting, this paper has been written. And here I may say that the duty of multiplication of maps has been placed in the hands of the Royal Engineers, as the professional training of the officers is such as renders them more practical in the methods employed, and also the Sappers under them for this particular purpose are men whose trade is that of lithography or photography.

In order to reproduce plans without the aid of light it is evident that but two methods are open—first, either the plan must be drawn in copying-ink; or, second, in an ink suitable for transfer to stone or zinc. The first plan is inadmissible, as it is almost impossible to get more than six copies from the original. The other method is that which has hitherto appeared most practicable. Those who are familiar with the subject of lithography and zincography will know that any subject meant to be reproduced must be drawn in a particular kind of greasy ink on a paper specially prepared for it, and that the greatest caution is required to prevent finger marks, caused by hot fingers touching the paper, from being transferred with the drawing. The prepared paper is also spoilt by moisture. The ink is generally in an inconvenient form, requiring rubbing up with water before being used. Evidently, then, there was a difficulty in the way. I had happened to direct my attention to the subject for other purposes besides that indicated, and after various experiments I had the good fortune to make an ink, not greasy, but yet capable of being transferred to stone or zinc. It was also unnecessary to use the prepared paper, the subject readily going down from the ordinary kind. This had important bearings, as it was immaterial if the fingers touched the paper, as the greasy markings from them could be destroyed before transferring it to the stone.

The colour of the ink, which was my great difficulty, is a black, and after transfers are taken from it the original remains nearly unharmed. It has been adopted into the service for field work, as, indeed, it has for the *dépôt* at Chatham and in the Surveyor-General of India's office. I exhibit some results from a *reconnaissance* done in the field with it. All that is necessary in using it is to keep india-rubber from the paper. If this be attended to it will go down cleanly and well to the stone or zinc. The stone or zinc plate is slightly warmed, the grease destroyed by an alkali, and, when damp, it is placed on the one or other, and passed through the press, when it will be found, in rolling upon the impression, that an exact *facsimile* of the sketch is produced. Three transfers can be taken from the same sketch, and within one hour from the time of receipt of a drawing fifty copies can be issued. It has not been deemed advisable to adopt any other process but this in the field, though, doubtless, improvements in the method will be developed, and render reproduction still more easy.

The next branch to which I wish to call your attention is that of reproduction by means of photography. It frequently happens that one plan of a district may have been obtained, and it may be necessary to reproduce it on a large scale or on the same scale.

It should be remarked that enlargements from an accurate map—say from the one-inch scale to the six-inch scale—are often most useful, enabling the reconnoitering parties to put in details without absolutely re-surveying the ground. As a rule, a negative is taken by the ordinary processes, and, if only three or four copies be required, prints are made on common salted paper, or on linen, a supply of both being taken in the field. Preferably one would use the former, and mount it on the latter. When over half-a-dozen copies are required we use a species of photolitho-

graphy. That method practised at Southampton was originally adopted, but it has again been our good fortune at Chatham to introduce a modification into the system which is easier to apply in the field. This I have called "papyrotypy."

The following is a brief description of Sir H. James's method:—Paper is coated with gelatine, and rendered sensitive to light by the addition of bichromate of potash. The action of light on this salted gelatine is to render it insoluble in water, and also incapable of absorbing water. Thus, if this sensitive paper be placed under a negative of which the black lines of the original are represented by transparent glass, and the whites of the paper by an opaque deposit of silver on silver and mercury, the lines printed on the gelatinised paper will become insoluble in any water, either hot or cold, whilst the white portions will absorb cold water, and actually dissolve away in hot. Up to this stage this process and papyrotypy are alike. In the Southampton method, the paper, after being printed upon by the action of light, is covered with a very fine layer of greasy and resinous ink. The back of the paper is next floated on hot water, thus penetrating to the gelatine, softening it, and rendering it liquid. It is then taken on to a flat inclined surface, and by the aid of warm water the soluble parts are all sponged away, carrying with them the ink that covered them, and leaving the lines represented by black ink in minute ridges of gelatine. Evidently now we have a drawing in greasy ink ready to be transferred to stone or zinc.

In papyrotypy the paper, after being taken from the printing frame, is immersed in cold water at once, thus stopping nearly all further action of light, for bichromated gelatine is only *slightly* sensitive when wet. It is blotted with blotting-paper to get rid of surface moisture, and then a soft gelatine roller charged with greasy ink is passed over the surface. Now it must be borne in mind that where the light has acted there *alone* the gelatine does not absorb water, and as water repels grease, the greasy ink will only take on those parts which have been acted upon by light; hence we have a facsimile of the original. Owing to the expansion of the gelatine when wet, the copy is sometimes finer in detail than the original. The benefit of this plan in the field is that no hot water is requisite, and that after one transfer has been taken upon zinc or stone, another can be rolled in on the paper and a fresh transfer made. Another point I lay stress upon is that the greasy ink is on the surface of the paper, and not on ridges of gelatine. After transfer to zinc or stone as many copies as may be required can be pulled off at the rate of seventy or eighty an hour from one press. This process has been adopted, and is found to answer well for the purpose to which it is applied.

(To be continued.)

## THE PRACTICAL PRINTER IN AMERICA.

### V.

#### MANIPULATIONS.

VERY much more depends, in the mode of working, on the precise details of manipulation, than at first sight appears. Success and economy are both secured by going the right way to work. Mr. Hearn's hints are very valuable, especially for working on a large scale. He says:—

"Unless photography is practised on a very small scale, the paper had better be floated in whole sheets, and not cut up, as is sometimes done, into half and quarter sheets.

"For the purpose of silvering or floating the paper, a porcelain dish should be obtained, and thoroughly cleaned before use; and when the printing solution is properly filtered, it should be poured into it.

"Bubbles forming on the surface of the solution after it is poured into the dish should be skimmed off—if they



do not break of their own accord—before the albumen paper is placed on the bath. If the bubbles do not break of their own accord, pour about an ounce of ninety-five per cent. alcohol into the solution, and stir well with a glass rod; or always keep a lump of camphor in the bottle into which the solution is poured after use.

“Considerable mechanical skill is required in silvering the paper properly. By proper treatment of the paper whilst silvering, many of the photographic printer’s troubles are, in a great measure, lessened.

“Many photographic printers, in placing the sheet of paper on the bath, take hold of two corners diagonally, and place the centre of the sheet on the bath first, and then in turn the two sides. In this way there will be a row of bubbles (minute in size) at that place where the paper first touches the bath, and which will take all the spare breath of the printer to break by blowing, and while this blowing is being done the paper will be silvering unevenly.

“Lay the dish on a bench in a room darkened with dark yellow curtains, and have the length of the dish run from your right to your left hand, as you stand facing it.

“In preparing to lay the sheet on the bath, first turn up the four corners of the sheet of paper to be sensitized at about one-eighth of an inch from the edge, so that you can readily lift it from the bath without having your fingers come in contact with the solution. I also, especially when the paper is dry, gently draw my thumb-nail along the sides of the back of the paper, at about one-quarter of an inch from the edge, being careful in doing so not to crack or break the albumen. This is done so that the sides of the paper will curve evenly in the silvering, and there will not be any sharp angles to it, causing it to sink below the surface, and the solution to flow upon the back of the sheet, thus spoiling the paper.

“*Remark.*—The sheet of albumen paper as it lies before you in the drawer is supposed to be back up, and consequently albumen side down.

“Take up the upper right-hand corner of the sheet (the length of it should run from your right to your left hand) with the right hand, and the lower left-hand corner with your left hand, and let the sheet assume a curved position, the right hand being highest. Lay the lower left-hand corner of the sheet (which you have hold of with the thumb and forefinger of the left hand) on the upper part of the dish, midway between the right and left-hand corners, keeping hold of the turned-up corner while it is there, for the purpose of guiding the corner to its proper place in the dish. As you hold the sheet at present, the upper right-hand corner is up in the air, being held there with the right hand.

“Now draw the corner that is on the solution gently towards the lower left-hand corner of the dish, and at the same time slowly lower the paper on the bath with the right hand, so that by the time the lower left-hand corner of the paper reaches its proper place, the whole of the sheet will be lying in the solution.

“The drawing of the paper towards you drives the bubbles that may be on the bath before the sheet, so that when the sheet is all on the bath the bubbles, if there are any, will be along the edges of and beyond the paper. A slight tap on the back of the paper may be necessary, but that is all.

“While drawing the corner towards you, and lowering the others, be careful that you do not dip the edges of the sides of the paper below the surface of the solution.

“If there should be a few drops of the solution on the back of the sheet while on the bath, they should immediately be blotted off to dryness with white blotting-paper.

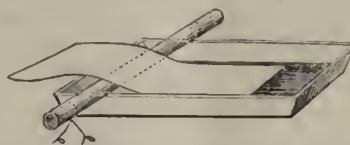
“Frequently when the sheet is first placed on the bath, especially during the cold weather, the edges of the paper will curl over. This is a frequent occurrence at all times of the year, where the albumen paper has been for a long time albumenized. Breathing gently (not blowing) will

immediately flatten it. The principal reason why this occurs is because the paper is too dry, as the moist air of the breath plainly proves, and hence a remedy shows itself: keep the paper in a very moist place for a day before sensitizing it.

“After the paper has been silvered long enough, it is then to be raised from the bath. Take hold of the lower left-hand corner with the left hand, and slowly raise the paper until the upper left-hand corner can be caught hold of and held with the right hand. Keep slowly raising the sheet until all the corners are off, and then let the few drops drain off that corner which was placed on the bath last.

“Hang the paper in a dark closet to dry, having that corner the lowest from which the solution was drained off into the bath. Use a spring nipper to suspend the paper by while drying, or hang it on poles, the sheets being placed diagonally, albumen side up, the pole running from corner to corner under the middle of the sheet. This last method prevents the solution from draining to one end of the sheet, as it will do when hung at full length, unless the surplus be removed by one of the methods hereafter described. An even coat of the solution is thus given to the paper, so that all parts of it will print alike. The bath should be stirred every time a sheet of paper has been removed from it.

“It is an excellent plan to draw the sheet of paper, upon removing it from the bath, across a glass rod [see fig.],



or if the edge of the dish is even, then over that, so as to leave the superfluous solution in the bath. I am very much in favour of using blotting-paper for the purpose of blotting the paper as it leaves the bath, and then give the final drying to the paper by artificial heat.

“After the bath has been standing for some time without being in use, there will be a reddish scum on the surface of it, which should be removed with strips of white bibulous paper before another sheet is floated.

“The time for floating the paper depends upon the strength of the bath, the temperature of both the bath and weather, the brand of paper used, and the class of negatives that are to be printed. As a general thing, the paper is floated from twenty to sixty seconds in the summer, while in winter it is floated from forty-five seconds to one minute and three-quarters.

“There are so many local things to be taken into consideration that it is almost impossible to state exactly as to how long the paper will have to be floated, and the beginner will have to make this his constant study, to learn the exact number of seconds necessary.

“The double albumenized paper should be silvered a much longer time than the single, and to prevent cracking of the film the paper should be damp before handling it for floating, and the finished prints, after washing, should be kept wet until mounted.

“When the bath is not in use, and is in the silvering dish, it should always be covered up.

“Pour the bath back into the bottle every night, wash the dish out thoroughly, saving the first two washings, and, until again wanted, set it away, bottom upwards, on a shelf covered with clean paper.”

LITERARY.—*Once a Week* begins a new lease of life on September 5th. It is to be altered in size and appearance, illustrated, and made to occupy the vacant ground awaiting a tenant; for though we have several comic and satirical papers, we have no magazine professedly humorous, and giving novels and sketches of the Lover, Lever, Cockton, or Smedley school.



# The Photographic News.

Vol. XVIII. No. 834.—AUGUST 28, 1874.

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## AIDS TO PROTECTION OF ART COPYRIGHT.

A LEGAL remedy, it has been said, is open to every man who is robbed or wronged; and so also, it has been rejoined, is the London Tavern. The truth is, a legal remedy, even for a wrong which definitely contravenes the law, is only available to him who has not only money in his purse, but has also leisure to pursue his remedy. One of the irritating forms of wrong to which the photographer is subject is frequent production of unauthorized copies of his work, for which neither remuneration nor acknowledgment is received. Where the piracy to which the photographer is subject is sufficiently serious to cause heavy loss, it may be worth while to invoke the troublesome remedy which the law provides: we say troublesome, because any kind of legal proceedings are inevitably troublesome, and full of anxiety to all who have not purchased familiarity by dire experience. But an especially annoying form of piracy is that to which the best photographers are most subject, namely, the use of their work as copies for the engraver or publisher of illustrated journals, who frequently fails even to pay the poor compliment of acknowledging the source to which he is indebted.

We have before us a prospectus of a company which proposes to supply a remedy for these evils. The "Illustration Company," the initiation of which, we believe, due to Mr. Henry Blackburn, a gentleman who has been considerably interested in the question of art copyright, undertakes to do for artists and photographers something similar to that which the Dramatic Authors' Society does for dramatic writers. It offers to all its members a much readier facility than they individually secure for obtaining recognition and remuneration for the use, for purposes of illustration, of copyright pictures; and whilst it affords to publishers a ready opportunity of acquiring familiarity with works available for their purpose, it removes any temptation to ignore the origin of such works, or make piratical use of them. In many cases photographs are employed by publishers without acknowledgment or payment, because some doubt may exist as to the legitimate recipient of such honorarium, and it is easier to ignore the claim than to find the claimant. The proposed registry will remove all difficulties of this kind, and whilst the establishment of a moderate scale of fees for use of copyright will tend to secure due regard for an author's rights, the extended and systematic payment of small fees may prove lucrative to the photographer. In any case, the scheme is a promising one, and well worthy of the attention of photographers.

The projected plan is very simple. A central registry of copyright pictures available for engraving is to be, or has been, established, where examples and lists of such works will be kept. Publishers desirous of producing such works for illustration in any form will receive a written permission on specific terms to make use of the pictures in question; quarterly accounts and the fees due being rendered to the author of the picture, with a deduction of ten per cent. for working expenses. Nothing could be more simple, nothing more desirable.

## SOCIAL GATHERINGS AMONGST PHOTOGRAPHERS.

It is a note-worthy fact that the two most active, and efficient, and peaceful photographic societies at the present time in existence are distinguished by a more essentially social relation than any other of the existing societies. We refer to the South London Society and the Edinburgh Society. For enduring vitality, activity, maintenance of interest, and absence of serious feuds or misunderstandings, we suppose the two societies named are not surpassed by any other. And, coincident with these qualities, may be noted the fact that both are in the habit of holding meetings in which social enjoyments form a pleasant feature of the gatherings.

The South London Society has for some time past had an annual dinner in winter, and out-door meeting and social re-union in summer; and its genial and esteemed president has for years past annually invited the members to a festive meeting at his house. On Saturday last a new feature characterized the annual out-door meeting, which was held at Kingston-on-Thames. On this occasion Mr. Samuel Fry invited the members to visit the new studio he recently described, and his landscape studio just finished.\* In the pleasant garden a marquée was erected, and an excellent cold collation provided for the members. This was but the prelude to a delightful evening, in which music, conversation, examination of pictures, and varied refreshment were combined, the graceful and kindly hospitality of Mr. Fry and Mrs. Fry pervading and leavening the whole proceedings. In response to the health proposed by the rev. president of the society, Mr. Fry incidentally remarked that it was his aim to set the ball a-rolling. And it is to this point our remarks are chiefly directed. As a simple matter of kindly suggestion, not as ostentatiously setting an example, Mr. Fry expressed a hope that similar meetings would become more common amongst photographers; and every one who has been present at any of them must echo the wish. How much good they might effect, and how much evil they might avert, it is impossible to say. The "parent society," which has just—finally, we hope—got through a series of troubles and convulsions, might possibly have escaped them all, if more personal intimacy and *esprit de corps* had subsisted amongst the members, and the shock which has weakened the strength and wasted the time of the society need never have been suffered; for whatever of constitutional imperfection might exist to give colour to the demands for change, it was to petty personal jealousies and rancours the origin of the agitation was solely due. Not simply in averting such evils would more friendly intercourse be valuable: there are many points of mutual professional advantage which might be aided in the informal intercourse which such occasions facilitate. It does not require argument, however, to enforce a point of this kind. It is enough to say that such re-unions are very pleasant; and that suggestion will probably be sufficient to secure for them extended consideration.

\* A description of this landscape studio is in type, and will appear in our next.



# BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE forty-fourth annual meeting of the British Association for the Advancement of Science, held this year at Belfast, under the presidency of Professor Tyndall, F.R.S., has just concluded. The meeting has not been one of the most successful of those held by the Association. The usual soirées, excursions, and sectional meetings have been held; the usual lionizing of one or two distinguished visitors; the usual flutter of excitement in relation to the papers on educational and social questions by ladies. But the meeting marks no special advance in science, no announcement of any discovery, no important practical step gained. The president's address issued in general disappointment. It was naturally expected that the opening address of the annual meeting of the parliament of science would have contained some brilliant exposition of the progress and present position of those branches of science with which the name of Tyndall is associated, if not of the recent advance of science generally. Nothing of the kind, however, entered into the presidential address. It consisted rather of a discourse on teleology—lengthy, superficial, nebulous, eloquent—more closely bordering on philosophy than science. It does not enter into our province in these columns to examine or criticise such an address; but we cannot avoid referring to the strange irony which seems involved in the fact that the inaugural address at an association for the advancement of science should intimate that the final outcome of the study of science was identical in its fundamental ideas with the doctrines of Democritus, Epicurus, and Lucretius. In seeking for the origin of life, force, thought, Professor Tyndall finds all in matter. Lucretius held that matter was eternal, that its ultimate form was indivisible atoms, and that the "mechanical shock" of these atoms was the all-sufficient cause of the universe and all it contains. Professor Tyndall, abandoning (to use his own words) all disguise, confesses that, prolonging his vision backward across the boundary of the experimental evidence, he discerns in matter "the promise and potency of every form and quality of life." But he admits the existence of an "insoluble mystery" in the evolution of life, and thinks that the admission of this mystery saves him from the imputation of "very rank materialism." This presentation of "vacant chaff, well meant, for grain," startled many, depressed more, and left a general feeling of surprise and disappointment.

Papers of photographic interest have not been numerous, nothing distinctly relating to photography except the papers of Col. Wortley and Captain Abney,\* which appear on another page, having been read. Photography, however, is constantly referred to incidentally as aiding in many branches of science. Photographic illustrations of various matters abound. In the geographical section we learn of its value in aiding the spread of accurate knowledge, especially in multiplying maps and charts in various sizes. Its value in doing this without any error in scale or any distortion that can be detected by the most rigid examination, was first proved, we are told, to be "practicable, and was adopted, in the Ordnance Survey Department in 1854 by Major-General Sir Henry James, for the purpose of facilitating the publication of the Government maps of the United Kingdom on the various scales. Since that date the necessity of rapidly producing, multiplying, enlarging, and reducing maps has tended towards the development of various photographic processes which have been brought to such a high state of perfection. During the last five years photograph negatives on glass covering an area of 10,071 square feet of silver prints were prepared and used in the various stages of the survey. An area of 959 square feet of the negatives was also used in producing 13,595 maps on various scales by the photo-zincographic process, which

was also introduced by Major-General Sir Henry James. It was by similar processes that the Germans were enabled to provide the enormous number of copies of the various sheets of the map of France required during the war of 1870-1." Of its value in a somewhat similar direction details were given by Lieut. Chernside, in his account of his experiences in arctic photography.

Bearing on the science of light, Professor Roscoe's description of a new actinometric instrument was interesting. It was described as an automatic instrument for measuring the chemical action of light. It consists of a clock, attached to the minute hand of which is a wheel with platinum points at different distances along the periphery; as these points touch a platinum tipped wire, which rests upon the wheel, a connection is effected by means of which a galvanic current puts in motion a cylinder. Round this cylinder is rolled sensitive paper, exposed through a disc in an insulator to the action of the light. The paper exposed to this disc is blackened by the light, and as the cylinder revolves is carried away and preserved for future observation. The instrument thus takes incessant observations, hour after hour, and day after day, without the work of a single attendant except to wind the clock. It is already in work at Kew, and will possibly be shortly adopted throughout the meteorological observatories of Russia. Its importance outside photography may be recognized when the fact mentioned by the Professor is recollected, that we are so affected by the varieties of the chemical action that the eleven year periods of the sun spots correspond to the violence of Eastern tornados and to the good vintage years of Europe.

## ROYAL CORNWALL POLYTECHNIC EXHIBITION.

[FROM OUR OWN CORRESPONDENT.]

THE forty-second exhibition of the Royal Cornwall Polytechnic Society, which was opened on Tuesday last, was of a mediocre character; and in no department was it more manifest than in that which may be called our own.

Exhibits and exhibitors showed a considerable falling off from previous years. This may be ascribed to several causes: the repeated changes in the executive, the want of publicity in regard to the exhibition—no announcement, either by advertisement or paragraph, appeared in the NEWS, as in former years—and the re-imposition of the rule which precludes metallists of the two previous exhibitions from receiving the same award at the current one, a change from which the exhibition most inevitably and righteously suffers.

Mr. W. D. Saunderson, of Manchester, shows five 18 × 22 pictures of Welsh scenery; the best of which, as well as the best of the whole of the large pictures, "At Aberglaslyn," is well worthy of the first silver medal awarded to it. The other pictures by this exhibitor are very ambitious in the extent of country they represent, and although, no doubt, interesting of that which they portray, yet of necessity somewhat tame and flat.

Messrs. Hudson and Purnell, of Ventnor, Isle of Wight, are again exhibitors of the same size views of their locality, and obtain a first silver medal for their "Crab and Lobster," which would, perhaps, have been more appropriate if appended to their "Cascade, Shanklin Chine."

Messrs. Alfred and John Bool have five of the same size pictures, in what may be termed their peculiar style—very sunny, but not particularly sharp. "On the River Wey" is certainly the best, and rewarded with a second silver medal, and a purchaser.

Mr. Reuben Mitchell's two pictures have considerable manipulative skill, as well as choice of subject, and obtain a first bronze medal; the same award being given to the enamels of Mr. W. J. Watson, of Hull.

Mr. Cocking's pictures are scarcely equal to his exhibits

\* Promised copy of Captain Abney's paper on Photography in Connection with the Transit of Venus had not reached us when we went to press.—Ed.



of previous years. An enlarged portrait in carbon, finished in water colours by Mr. Bennett Lowe, is yet under judgment.

In the amateur department there are only three exhibitors: Mr. F. Beasley, jun., with sixteen 10×12; Mr. John H. Morgan, of Clifton, with twelve 10×12; and Mr. W. J. A. Grant, with a frame of five cabinet views.

Mr. Beasley's pictures are not so pretentious in size as the professionals', yet what they so lack they make up in point of quality, in which they may be deemed superior. Water, which hitherto has been the *bête noir* of photographers, seems to be under perfect command of this gentleman, as may be particularly instanced in the perfect rendering of it in a "View at Streatley." A first bronze medal is certainly not sufficient acknowledgment of the value of this fine series of pictures; and here it may be remarked, that on each of this exhibitor's pictures is a note stating the process (Fothergill), the number of days between preparation and exposure, and also between exposure and development. If all exhibitors were to do the same, and append the make of collodion and nature of lens, they would make their contributions more valuable.

Mr. Morgan's series are all by wet collodion, and are not over-rated by the award of a first bronze medal. Where all are good it is hard to choose, but preference must be given to his water scenes, particularly "The Mill Dam;" one hardly knows which to admire most—the quiet liquidity of the pool, or the slender cascades trickling over the dam.

A good word must be given to Mr. Grant's frame; the contents, though the smallest in size of any, are perfect gems.

### THE STATUS OF PHOTOGRAPHY.

BY R. W. ALDRIDGE.

I ALWAYS feel a pleasure in reading any communication with Mr. Bovey's name attached to it. A mixture of practical sense and gentlemanly feeling is sure to pervade the letter. Were all photographers to think and act in the same spirit, I am convinced there would be no reason to complain of the unsatisfactory view of our art taken by the general public. That such an impression does prevail in the outside world I have only too good reason to know from personal experience; more especially from the good-natured expressions of surprise on the part of my friends that an artist should have anything to do with photography. These people have evidently settled the fine art pretensions of photography in a way far from complimentary to the younger sister, and even seem to consider that there is something incompatible between the pursuit as a profession and the ordinary work of an artist. I generally meet such an objection by producing some work in which the artistic element is conspicuous. What, for instance, could be better for such a purpose than the "Stolen Moments" of Hubbard—a small, but, to my thinking, the most perfect, specimen of combination printing that has yet been exhibited?

It seems difficult to give any one satisfactory reason for this very prejudiced view of the case. Doubtless the low prices have something to do with the matter. Probably, if the suggestion made some time since by Mr. Blanchard, that photographs should be charged twenty guineas each, were carried out, it would be better for the art, and for some of its professors. The difficulty, however, lies in getting the public to agree to such a proposition. That the Bohemians of the black art, who waylay us in every suburban road—who choose the Sunday especially to ply their vocation in the streets of Kew or Richmond, at Wormwood Scrubs, and other similar places—that these gentry who cluster together at our watering places, and produce their new horrors of the sea-shore at the rather extravagant price of sixpence each, should give to the world in general an unfavourable impression, is not surprising. These itinerants bear something like the same relation to the skilled photographer

that the organ-grinder has to the musician. The misfortune is, that while these fellows are seen everywhere, the works of our really great masters—the Crawshays, the Blanchards, the Robinsons—are still, I regret to say, seldom seen, and, to the great mass of the people, comparatively unknown. It happens, too, that some of the names most familiar to the public in connection with the art owe their success to a certain mechanical skill, and still more to their aptitude for business, rather than to any high artistic qualities, which in most cases are principally conspicuous by their absence. To publish a number of cartes of clergymen—or, still better, of actresses in their stage 'undress'—is now the shortest road to commercial success. The public, who hear their names most frequently repeated, naturally conclude they are the principal representatives of the art.

There is at the present time, and that, too, by some of our best practitioners, a great complaint of declining patronage, and a probability, from what I hear, that more than one of our once successful men will come to grief this winter. Whether this want of patronage is owing to the low estimate of the art, is, of course, open to question; it seems, however, likely enough. Mr. Bovey has made some suggestions for remedying this untoward position of things; to which I will add a few ideas of my own, drawn principally from analogy with the sister art of painting.

Mr. Bovey thinks we want "some institution where membership would be regarded as the highest seat of honour, whose certificates might be accepted by the outside world as a certain proof of extraordinary skill and intelligence possessed by each legitimate holder. R.A. sets the status of the princes of the artistic world on an unchallenged throne. F.R.P.S. would doubtless set photography on its proper and merited footing." It seems to me that we want an association of our principal photographers with higher aims, and an exhibition of a much more permanent character, than any we have yet had. London is able to support about a dozen picture exhibitions generally open for about three months at a time, and some of them exhibiting twice in the year. Surely there is room in this great metropolis for a photographic exhibition lasting two or three months, if well placed and well advertised. Picture exhibitions are generally found at least to pay their expenses, and in some instances produce a considerable profit to their members.

It may perhaps appear presumptuous to compare any photographic society with the Royal Academy, who have accumulated a large fund from their annual exhibitions, which are supposed to yield some £20,000 yearly as the result of a three months' exhibition, thus enabling them to provide for the gratuitous education of artists; and also for any of their members who, from old age or insufficient patronage, may require such assistance. Not to instance the Royal Academy only, let us descend to lower ground, and take the two water-colour societies: namely, the Society of Water-colour Painters, and the Institute of Water-colour Painters. These both have their galleries in Pall Mall, and it was in the rooms of the elder body that our short exhibition was held last year. These societies have been established many years, and have found their exhibition such a success that both have now a winter and a spring display. Like the Royal Academy, the number of the members is fixed, and, if I remember rightly, at the same number—that is, forty full members and twenty associates. The latter are allowed to exhibit (in the case of the Academy the number of works is limited to eight; in the water-colour societies no restriction is made regarding the numbers), but have no part in the management. It is from this number of associates that the members fill up any vacancies that may occur in their own body. As the success of the society depends entirely upon the excellence of the works exhibited, they naturally select the best men for their members.

I cannot help thinking that a body composed of our best photographers, with a proper "local habitation and a name," would help to give a dignity to our wonderful



art that is now painfully wanting. A royal charter might be a subject for future consideration. It seems to me that the art claims of the profession would be much more readily admitted if the president of the Royal Academy, or some well known artist—Mr. Millais, for example—could be induced to take the presidency. At any rate, the headquarters of the society and its exhibitions must be in London. We have peripatetics enough already; we do not want a society to follow in their footsteps.

Whether photography has yet reached a point at which it is desirable that such a society should be founded is, of course, a question for consideration. The money value attached by artists to membership may be gathered from a fact within my own experience. Some time since I was speaking to a painter whose son had just been elected an associate of one of the water-colour societies mentioned, when he observed that it was worth a thousand pounds to him. I remembered that about a dozen years before I had been pressed by two friends, who were members, to join their society; being at the time desirous to turn more of my time to painting in oil, I had declined, but could not, now that I heard the value attached to the connection, forbear smiling at the idea of having lost £1,000 in that way. I enquired his idea of the value of the R.A. attached to the name of an artist, with its privileges. "Oh! was the answer, say £5,000." This was of course a fancy estimate. It must, however, be remembered that, if required, a member is entitled to a pension of something like £200 a year. The profession of an artist is now one of acknowledged respectability, and its members are generally received as gentlemen. That it was not always so, one or two extracts, principally from Beechey's Life of Sir J. Reynolds, the first president of the Royal Academy (established in 1769), will serve to show. I add one or two more in connection with the progress of the Royal Academy that seem to me interesting, as illustrating the position of the photographic body. It will be seen that the *status of artists* in this country, prior to the foundation of the Academy, was certainly capable of being improved:—"The works of English artists," observes Mr. Farington, "had been hitherto seen only by a few, and the greater part of the community knew absolutely nothing of what was passing in the arts. Private collections were then inaccessible, and there were no public ones, nor any casual display of the productions of genius, except what the ordinary sales by auction occasionally afforded." "The history of our exhibition," Farington continues, "affords the strongest evidence of their impressive effect upon public taste. At their commencement, though men of enlightened minds could distinguish and appreciate what was excellent, the admiration of the many was confined to subjects either gross or puerile, and commonly to the meanest efforts of intellect; whereas at this time the whole train of subjects most popular in the earlier exhibitions have disappeared. The loaf and cheese that could provoke hunger, the cat and canary-bird, and the dead mackerel on a deal board, have long ceased to produce astonishment and delight; while truth of imitation now finds innumerable admirers, though combined with the high qualities of beauty, grandeur, and taste. To our public exhibitions, and to arrangements that followed in consequence of their introduction, this change must be chiefly attributed." One more extract, and I have done. "Such an example [that of Sir J. Reynolds] at the head of the arts," continues Mr. Farington, "had the happiest effect upon the members of the profession. No class of society manifested more speedy improvement than the body of artists. In the example set by Sir Joshua Reynolds, he was supported by some of his contemporaries who were highly respected for the propriety of their conduct and gentlemanly deportment. So striking was the change, that a much-esteemed artist, far advanced in life, being a few years since at a dinner-table surrounded by men of his own profession, recollecting those of former times, remarked the great difference in their manners, adding, 'I now see only gentlemen before me.'"

## A PRACTICAL SUGGESTION FOR STEREO-LANDSCAPE NEGATIVES.

BY JOHN C. BROWNE.\*

THE making of stereoscopic pictures is one of the most lucrative departments of photography, and the number and variety of subjects everywhere obtainable of the "wonders of the world," together with the vast assortment of historical views and local bits of interest, make a collection of endless extent and beauty.

If anything can lay claim to popularizing photography, it has been the discovery of the principle of the stereoscope, and the fund of information, as well as pleasure, gained by examining pictures through its magic lenses.

Various changes and improvements have marked the advance in the construction of camera boxes and lenses suitable for making stereoscopic negatives. From the original idea applied to photography, of a clumsy box and single lens, ill adapted for the purpose, arranged to turn on a table at the required angle, and necessitating two entirely separate exposures to produce a single stereoscopic picture, what a wonderful change to the elaborately constructed binocular instruments of the present day, embracing all that is necessary for rapid adjustment, portability, and first-class results.

The size of glass has altered considerably. From a plate less than three by seven inches, it has been enlarged to five by eight, and with good reason. Such a plate allows a picture to be cut from it larger than the former size, with pleasing effect, provided that the extra amount of subject is not added to the width of the picture, but to the top or bottom, otherwise the distance from the middle of each picture will be too great for proper stereoscopic effect. This size is very popular in America, being almost universally used, even if the prints are put upon three and a-half by seven inch mounting cards.

While the author deprecates the constant changing of the size of picture, as adding much expense and unavailable material to the photographer's outfit, still there are advantages in a larger size of glass eminently useful and practical. Instead of a five by eight camera box, none are made with a holder capable of taking a plate eight by ten, with one pair of stereoscopic lenses arranged in the usual manner. The holder can be adjusted to expose the upper part of the plate, the lenses covered after exposure, then the lower portion can be exposed, by a readjustment of the holder, by placing it in the position of the first. Two stereoscopic negatives of the same subject may be obtained without altering the position of the camera. This may appear, at first sight, of but little importance, but it has the double advantage of two chances to obtain a perfect picture, and, should both be successful, a duplicate negative with one manipulation. Applied to gallery work, this is a very old idea, having been duly secured by patent, or application to that effect; but as an assistant to the landscape photographer, I have never seen a notice of it in print. During last summer my attention was drawn to the practical use of this arrangement in the hands of Mr. J. A. Graves, who has so well portrayed the charming scenery of the Delaware Water Gap. Doubtless it has occurred to many photographers that a camera of similar construction would be useful, but we can learn of but few that have adopted it for landscape purposes.

## Notes and Queries.

### THE FOCUSING CONUNDRUM.

SIR,—The conundrum which "O. G. R." puts for solution involves an interesting and knotty point. Strict accuracy would demand that the camera and figure should not be moved in any way, but remain where they are, the focussing alone being modified. The figure, being out of focus by being further off,

\* *Photographic Mosaics.*



should of course have the focus shortened to bring it into good definition. But then comes another difficulty. By shortening the focus the size of the figure will be slightly reduced (as for true perspective it should be), and in double printing it will not quite fill the space of the blurred image; whilst if the camera were moved slightly to bring the figure into focus, the image would be slightly larger than true perspective would demand, but would fill the space of the blurred image.

On the whole, I should prefer not to move the camera, but to bring the figure into focus, accepting the infinitesimal reduction in size, and cut my mask as small as possible for the double printing. If a trace of the blurred edge of the out-of-focus figure were not quite masked out it would not seriously matter.

X. Y. Z.

The figure out of focus was, of course, taken on the same plane as the foreground figures, and no doubt too large, but inappreciably so. Now, if I screw-up or shorten the camera slightly, I get him easily in focus, but on another plane—more distant, and too small to fit the original Mr. Blurr. Therefore it would be better to leave the camera untouched as to lengthening or shortening, but push it nearer to the object, until it became softly in focus, and then the head would fit the body, or the lower part, seen under the table, would remain in the original groove.

Q. E. D.

Sir,—In answer to the Photographic conundrum in last NEWS, I have to say that if "O. G. R." shortened the focus of the lens for the second plate, he would get gent. No. 3 too small to supply his place on plate No 1. By moving the camera nearer he would obtain an image a little too large for true perspective, but he would have no trouble to print it in place of the first out-of-focus figure. The best plan would have been to leave No. 3 out of the first group, then to shorten the focus, and do No. 3 alone behind the table.

SPOTTED-OUT.

Sir,—Your correspondent "O. G. R." is almost as noted for his love of a joke as for his dark deeds with the camera. I cannot help thinking, therefore, that Mr. Rej—I beg his pardon: "O. G. R."—is making fun of us in the question he puts. How can he get No. 3 into focus, either by shortening the camera or by pushing it forward, without throwing the other figures out of focus? I should cut the knot by moving No. 3.

R. A.

#### TEXTURE OF HAIR IN ENLARGEMENTS.

Sir,—“Artist” does not tell us how the fine, flossy, glossy beard in good focus was enlarged so that it became like a coarse rope. I have seen enlargements with this harsh rope-like hair, and I have seen some without. I fancy the objectionable coarseness is generally obtained when a transparency from the negative is taken by the ordinary wet process, and an enlarged negative taken from that. It seems natural that the crystalline deposit produced by iron development, when enlarged, should look coarse. Then I believe opticians state that there is some blurring in the transparency caused by the diffraction of the light passing through the fine spaces of the negative when camera printing is employed. Mr. Edwards states that no such coarseness of hair arises when a good albumen transparency is used, and, if I am not mistaken, he once promised, at some future time, to explain the *rationale* of this. Has he ever done so? If not, would not this be a good time to make the explanation?

ANOTHER ARTIST.

#### PRELIMINARY COATINGS OF ALBUMEN.

Sir,—Like “R. M. S.” I have been unsuccessful in the use of an albumen coating in the wet process. I have found the albumen troublesome to keep, troublesome to apply, and of uncertain value. I have generally used it made with one egg to ten ounces of water, with a little ammonia added. I think it is possible that further light might be thrown on the subject if it were discussed in your puzzle column of “Notes and Queries.”—Yours obediently,

A LAZY AMATEUR.

[As the letter of the following correspondent really touches the question of the “Lazy Amateur,” we place it as an answer in the column of the “Notes and Queries.”—ED.]

DEAR SIR,—My experience with the preliminary coating of albumen is of only short duration, but it is such that, so long as

I have negatives to take, I believe I shall continue it. I use the white of one egg to the pint of water (possibly a weaker solution may be better, as you suggest) with a few drops of ammonia. Having thoroughly washed the plates, while still wet I place (say) half a dozen quarter-plates to drain at one corner, so as to have only sufficient moisture to allow the albumen to run over the plate. Holding the plate with the finger and thumb perfectly dry, I pour the solution in the same way as in collodionizing, and stand to dry on blotting paper, or damp cloth, and hitherto have found no detriment to the bath.

VERNUM SAP.

#### A DEVELOPING QUERY.

In developing a plate, you should, by chance or awkwardness cause a little *island* to be untouched by the developer (of course, it ought never to happen), then pour on it after the formation, as much, and as long as you like, the part of the picture at that spot refuses to come out. I am not surprised that the boundaries of that spot “island” will always remain; but why has “d. spot” ceased to move, and open its pores like the other part of the plate?

ENQUIRER.

#### PHOTOGRAPHING FLOWERS.

Sir,—You have often helped me out of difficulties: will any contributor to your PHOTOGRAPHIC NEWS tell a lady how to photograph groups of flowers? When I expose the proper time for the flowers, the leaves, and stalks, and buds are under-exposed. I have tried with paraffine oil, and with gum, to make transparent paper to gum on the back of the negative, with the idea of working up the leaves in pencil, but the paper loses its transparency after a few hours. I tried wetting the leaves, and also varnishing them, but it did not succeed in making them more sensitive to light.

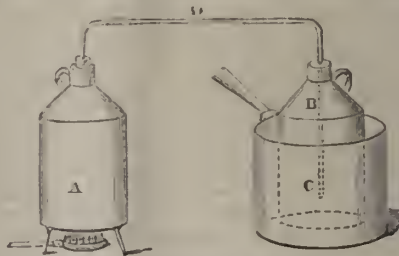
A LADY.

#### Correspondence.

##### A CHEAP STILL.

DEAR SIR,—I send you the details of a still which I use, and which is cheap.

A is a tin can filled with water, which is put on a common fire or gas stove. B is a stone or tin bottle which



is put into a saucepan (C) filled with cold water. D is a thin pipe about a quarter of an inch diameter, which is passed through the cork of A; the other end is put loosely into the bottle (B) nearly to the bottom.—I remain, your obedient servant,

C. I. E.

#### DR. VOGEL'S DISCOVERY IN PRACTICE.

Sir,—There will be some hopes now to photograph a sunflower after reading Dr. Vogel's discovery. Last year I tried many times to photograph some fine sun-flowers—a fine emblem of photography—but was not very successful. I tried letting the sunshine on them through a blue glass, but there was no improvement upon the sunlit one; it was good enough to draw from, but not good enough as a photograph, except in the highest bends of light.

O. G. R.

#### MR. TILLEY'S DOUBLE PRINTING SECRET.

Sir,—Mr. Tilley's generosity in allowing photographers six months for speculation, experiment, and suggestion in relation to his method of double printing will be found in



many cases rather tantalizing, I fear, as "hope deferred maketh the heart sick," and damps the ardour of enthusiasm. I fear that most of the proposals have been rather wide of the mark. I notice that in order to solve the method of working *without* cut-out masks proposed by Mr. Tilley, various correspondents propose a method *with* cut-out masks. Mr. Werge's proposition in a contemporary, of using the powder and bichromate process, in a manner somewhat similar to that already proposed in your columns, will, I fear, be found defective in practice. He proposes to take the portrait with a plain dark background screen, so that in the negative the background will be somewhat transparent. He would then coat the face of the negative with the sensitive dextrose solution, and print under a landscape negative, and finally develop with plumbago, taking care to avoid the figure in applying the blacklead. He says that the film of bichromated dextrose will need no washing. It is here I am at issue with Mr. Werge. I tried your suggestion, some time ago, of improving a thin negative by applying the powder process at the back, and proceeded to print without washing, thinking the thin yellow film would only slightly retard printing; but I found it became brown and opaque under the action of light, and not only retarded, but altered, the whole conditions of light and shade.

The plan which Mr. Burgess proposed some time ago, and of which Mr. Werge's proposal appears to be a modification, seems to me most nearly to meet Mr. Tilley's conditions. He coated the varnished negative with collodio-chloride, painted out the figure with indian-ink, printed, and fixed. The indian-ink was washed off in the process of fixing and washing, and the negative had a landscape background produced on it, whilst the figure remained untouched.—Yours very truly, W.

#### HEALTH OF PHOTOGRAPHERS.

SIR,—One word as to health. For some two or three years my health was failing, and my medical adviser recommended me Turkish baths; and from twelve months' experience I may speak somewhat positively as to their beneficial effects. No doubt from respiration, as well as through the pores, we constantly imbibe more or less of chemicals into the system, which ordinary bathing, warm baths, or washing will never remove, but which Turkish baths, from their peculiar nature, will. I know the medical profession, as a rule, do not countenance them, but I know the value of them personally, and am desirous, as far as possible, to advocate them amongst photographers. I may say I have accomplished more individually the last twelve months than in the three years previously; in fact, I was brought so low, from nervous exhaustion, that I was necessitated to leave home. Hoping you will give this some advocacy in your valuable paper, I remain, dear sir, yours

VERBUM SAP.

#### Proceedings of Societies.

##### EDINBURGH PHOTOGRAPHIC SOCIETY.

THE August out-door meeting of this society took place on Friday, the 21st instant, when, notwithstanding that so many are at this season out of town, a good number turned up at the Waverley station at seven o'clock; and as several members were picked up at the various wayside stations *en route*, fully the average number reached East Linton a little after eight o'clock, where, in Sharp's Railway Hotel, ample justice was done to a substantial breakfast.

The foundation having thus been laid, and all necessary information as to the best route to the various places proposed to be visited having been obtained, the party started in suitable conveyances, determined to make the best of the day, which, photographically, was all that could be desired. The first point of interest was Hailes Castle—an interesting relic of ancient times, but not of much value to the photographer in search of the picturesque, and so only three cameras were brought to bear on it.

We need hardly say that those who did not photograph were not idle. Fun and frolic were the order of the day, and especially prominent were a few who seemed strong in punning powers. The first hit in that direction was made by Mr. Stenhouse; and as it was really good—which is more than can be said of such attempts generally—we give our readers the benefit of it. The members were walking single file along a narrow pathway leading from the ruin, when he, slightly altering the name "Cameron," quoted in musical chant the line of the well-known song—"Tis the march of the camera men."

The next halt was made at Whittinghame, the residence of Mr. Balfour, a grand old house standing in the midst of a gloriously-wooded landscape. Here a few pictures were taken, when it was declared time for luncheon, which was very much enjoyed under the grateful shade of some fine old trees, after which the order was given to proceed to Biel House, one of the residences of Mr. Nesbit Hamilton, and, in the opinion of the leader of the party, the best bit in the route.

On the way the party came in sight of a neat tiled cottage close beside a quaint old bridge, and at the end of a beautifully-lying and well-kept garden; what, however, attracted their attention was, not the house or garden, but a large glass house at the opposite end of the garden, bearing unmistakable evidence of having been built for photographic purposes. Why a photographer should settle down in a locality miles from even the smallest village, and almost as much from his nearest neighbour, was a puzzle which they at once resolved to solve, and so the two secretaries were despatched as a deputation. The place they found was called Lint Mills, and the owner was a Mr. Nisbet, who, according to the evidence of a nice-looking young woman, the only person about the place, "did a very good trade amongst the people round about." Mr. Nisbet himself was from home, but she produced the key, and asked them to go and look at the studio and pictures. Both were in their way first-rate, the latter quite equal to the average productions of his brethren of even the largest cities. The girl, apparently proud of her uncle's abilities, then invited them to examine his workshop, where they found that he combined the profession of carver in wood with that of photographer; and although there were no specimens of his work in this department to be seen, there were a number of drawings from which carvings had been made which showed that Mr. Nisbet is undoubtedly a man of genius, who enjoys the quiet of a country life, and who possesses the ability to make it pay.

Biel House was reached shortly afterwards, and here the first hitch occurred. The family were from home, the factor was in Haddington, and the gardener, the only other man who could give permission to visit the house and grounds, was away at a funeral. It was, however, quietly hinted that the doors and gates were open, and that "there is nae body at hame to hinder ye to take leave." The hint was of course taken, and the party were well rewarded for their courage. Biel House is really one of the most lovely places in Scotland, and admirably adapted for the work of the camera, including, as it does, a fine old house in the middle of a magnificent fancy garden, surrounded by a densely-wooded park, through which runs a fine stream spanned by several bridges. In front of the house stands, undoubtedly, the largest, and probably the oldest, cedar in the country, it having been planted in commemoration of the union between England and Scotland. All cameras were soon at work, and kept at it till every plate was exposed, and still it was by one consent agreed that the work had not been half done. Every turn of the road brought some new beauty into view, and made them wish that they had counted their plates by tens instead of units.

At five o'clock the signal was given to constitute an ordinary meeting of the society, and the president took the chair on the top of Biel Bridge. The minutes of the previous meeting were held as read, and Messrs. J. Thompson and Casimir Roques were admitted ordinary members.

This being all the business the meeting was adjourned, and the party drove off on their homeward journey towards East Linton. Here they finished up with the usual tea-dinner, and were just in time to catch the last train for Edinburgh, which they reached at half-past eight, highly delighted with the proceedings of the day.

#### Talk in the Studio.

ALBUMEN PRELIMINARY COATING.—A correspondent says:—"I see in your last that I am not the only one in trouble with the albumen for plates, as my experience causes me to abandon it, and refer to elbow powder; namely, for plates that have



been in use and varnished, I put about eight at a time into an old sensitizing dish (say 10 by 8), and pour over them boiling water; then I take a broken table-knife, sharpened fine like a joiner's chisel, and well shave off all the film, varnish, and then wash under tap; then rub with fine rouge prepared for polishing (sold at three shillings the pound), damp it, and rub the plates; set them to dry; rub off when dry, and they polish as fine as when new. They are the glass called "foreign plate," sold to me by Harvey and Co., Leeds—the best kind of glass made for photographic purposes, and cheap, and I never find one dirty after going through the rouge," &c.

**PHOTOGRAPHING THE INVISIBLE.**—A curious illustration of the slow travelling of ideas, even in the present period of journalistic activity, is just furnished by a paragraph which has appeared during the last week in some of the daily papers, extracted from the *London Medical Record*, being an account of the experiences described just twelve months ago before the British Association at Bradford. The paragraph is as follows:—"Dr. J. H. Gladstone, F.R.S., has called attention to some photographs of fluorescent substances, which the editor of the *Philadelphia Medical and Surgical Reporter* thinks may help to explain the mystery of the so-called spirit photographs of which we have lately heard so much. It appears that the fluorescent substances, such as bisulphate of quinine, or uranium glass, have the power of altering the refrangibility of the violet or chemical rays of light; hence, although paper painted over with bisulphate of quinine will look nearly white, it will appear in photographs as if it were nearly black. Dr. Gladstone has exhibited some photographs of ornamental design traced on white paper with bisulphate of quinine; although the designs were nearly invisible to the eye, in the photographs they were boldly visible. A colourless solution of bisulphate of quinine was placed in one glass, and some ink in another glass; when both glasses were photographed they came out equally black. Dr. Gladstone said that once at the seaside he painted a pattern with bisulphate of quinine upon paper, and took the paper to a photographer to be photographed; he objected, because there was nothing on the paper, but on trying the experiment he found out his error. It was stated that some kinds of varnish possess a similar power of affecting the refrangibility of light."

**MANSSELL'S PHOTOGRAPHIC SKETCHES.**—Mr. Manssell sends us some very charming studies, drawn by an artist whose name is new to us—Mr. Francis Miles—but over whose pencil we linger with never failing delight. In his "Ruth" we have the careful, sadly-thoughtful widow; in "I've been Roaming" we have the mischievous bewitching face of one who is seen at her best in the small hours of the morning. This method by Mr. Manssell seems to claim a special value as a means of reproducing pencil and crayon sketches of the old and of later masters, and of artists' studies in general. The imitation of the original material of the sketch is perfect; anyone not in the secret would at once imagine he was examining a work produced by the pencil; and this, not merely in the sharper outline, but in the shaded parts, where the graphite tone is even more exactly copied. The effect is, of course, heightened by the employment of matt paper, instead of the usual albumenized surface with its bright gloss.—*Bookseller*

**RAIN WATER IMPURITIES.**—In a recently published work on "Sanitary Arrangements for Dwellings," Mr. Eassie points out the precautions to be adopted in cases where rainfall forms the chief or only source of water supply. Generally it will be found convenient to store rain falling on the roof in an underground tank, formed of brick or concrete, puddled outside with clay and covered inside with Portland cement. But care must be taken that the down spouts conducting the rainfall to the tank do not drain either zinc roofs or lead flats. Even on tile or slate covered roofs, the water will have passed over lead flashings, ridges, hips, and valleys, charging it with a small percentage of lead, but not more than one-twentieth of a grain to the gallon. With a greater proportion than this, water becomes dangerous to use, being more or less poisonous. Since rain acquires certain impurities, even while passing through chemicals or the air, it should always be carefully filtered before being used for drinking or cooking purposes. In the case of a house supplied with an underground receptacle, filtration could be easily managed, by placing an earth filter on the delivery side of the down spout, at its exit from the tank. An eminent authority on sanitary subjects, Dr. Angus Smith, believes rain water can be so completely filtered through earth as to remove all impurities. Whenever rain water is stored for drinking purposes

the caves of the roof, troughs, and down spouts should be enamelled, and the supply ought to be carried to the tank through glazed earthenware pipes. This prevents leading, but other deleterious ingredients will still remain. In manufacturing towns, soot, oil, and sulphuric acid form some constituents of rain water. With those facts in view, most people will agree with Mr. Eassie, in his conclusion that "generally speaking, rain water should be excluded from the kitchen," although extremely useful in laundries and conservatories.—*Scientific American*.

## To Correspondents.

- A. WALL.**—Crapiress in collodion is generally caused by the ether and alcohol employed in its manufacture not being sufficiently highly rectified; but the same result may also be brought about by bad manipulation. If, for instance, the plate be immersed in the nitrate bath before the film is fully set, a crapy condition of film will sometimes result. If the collodion be thick or glutinous, the absence of skill in coating the plate, and duly rocking it from side to side, will sometimes produce a crapy appearance. If the fault be in your manipulation you may easily avoid it; but if it be in the collodion there is no remedy but getting it exchanged by the person of whom you obtained it.
- J. E. B.**—Mr. Willis's address is at Scarborough; we do not remember precise details. He does not manufacture paper for the trade; and having freely given the results of his experience to photographers, it is scarcely fair to trouble him further. Each photographer should work out difficulties for himself. At the time when the matter was published the details were discussed in the *Photographic News*, and Mr. Willis gave all the information he could through our columns. We cannot answer letters on photographic subjects privately.
- G. WALLIS.**—Various formule for the lime toning bath have been published in our pages, so that we cannot tell to which you refer. A very simple and good formula consists in using three grains of chloride of lime to two grains of chloride of gold in twelve ounces of water, mixing the solution twenty-four hours before use.
- C. M. M.**—In making enlargements, the position of the lens may, with advantage, be reversed, the front of the lens being turned to the larger image, as it is in portraiture. 2. If you have no use for your No. 4 it will undoubtedly be wise to change it for something which will be of use. We cannot answer photographic queries by post, and as they do not come under our attention until we are writing these answers for the *News*, no time would be gained if we did.
- AN AMATEUR.**—Slug tracks of matt silver on negatives may proceed from various causes, but they chiefly arise from the use of a horny, repellent collodion. The collodion may be modified sometimes by the addition of a few drops to each ounce of distilled water; sometimes by age; and sometimes by adding a little old collodion. Immersing the plate before it is too much set is sometimes a remedy. Be careful to allow the plate to rest on pieces of clean blotting-paper, and keep the inner frames scrupulously clean by constant washing with clean water. Re-dipping the plate in a pure neutral twenty-grain solution of nitrate of silver after exposure is sometimes a remedy.
- J. BRIER, JUN.**—Mr. Gordon is out of England, and has been for some time. When he will return we cannot say. Hence, you will see, we cannot say anything of his intention in relation to his albumen process. You appear to have attained to considerable success in dry plate work. The prints you forward are excellent. Spots are, so far as we know, only to be overcome by especial care in manipulation, especially in filtering solutions. We shall be glad if you will give our readers a synopsis of your experience in dry plate work.
- CUMBERLAND.**—Glucose is grape sugar. It may be obtained of most chemists. 2. Your silver bath containing acetic acid may be used for exciting albumenized paper; but it would have been better without the acid. There is no ready way of removing the acid.
- A. LADY.**—The best plan we knew to photograph groups of flowers is to place them in a good light and give a good long exposure with a collodion containing a large proportion of bromide. We place your letter in our column of "Notes and Queries," where it is possible some other experience may be elicited.
- B. L. G.**—There is no patent for an enamel process in force in this country at the present time, so far as we are aware. The general principles of all processes are known and published, but certain details of formulæ and manipulation are kept secret. We cannot write private letters on such subjects.
- N. R.**—We do not think that the amorphous albumenized paper can be obtained in this country at present. It was not much in demand, and ceased to be imported.
- A "NOTE ON THE SALTS OF IRON SENSITIVE TO LIGHT,"** by W. H. Watson, in our next.
- Several Correspondents in our next.



*The Photographic News, September 4, 1874.*

## PHOTOGRAPHY IN AND OUT OF THE STUDIO.

## LORD BROUGHAM AND THE INVENTION OF PHOTOGRAPHY—SUCCESSFUL COMMERCIAL PHOTOGRAPHS—PHOTOGRAPHY IN ARTISTOCRATIC CIRCLES.

*Lord Brougham and the Invention of Photography.*—Although, doubtless, Lord Brougham's experiments with light would have caused the subject of depicting images by means of the sun to be more assiduously studied at the close of last century, had they been published to the world, one can scarcely believe that they would have been instrumental in giving us a practical process at an earlier date. In the "Memoirs of Lord Brougham," written by himself, he thinks that, in all probability, photography would have been known to the world much earlier if only a communication which he forwarded to the Royal Society in 1795 had been published *in extenso*. Many of our readers are aware of the allusion made by Lord Brougham to the subject. He says the paper was very courteously received, but Sir Charles Blagden, the secretary, desired parts to be left out in the notes and queries, as belonging rather to the arts than the sciences. "This was unfortunate, because, having observed the effect of a small hole in the window-shutter of a darkened room, when a view is formed on white paper of the external objects, I had suggested that if that view is formed, not on paper, but on ivory rubbed with nitrate of silver, the picture would become permanent; and I have suggested improvements in drawing founded on this fact. Now this is the origin of photography; and had the note containing the suggestion in 1795 appeared, in all probability it would have set others on the examination of the subject, and given us photography half a century earlier than we have had it." Brougham's name, therefore, should certainly be added to those of Wedgwood and Davy and other early investigators of photographic action; but seeing that it is only a suggestion, and no practical result, that is in question, it would scarcely be fair to other more successful experimenters to call Lord Brougham the originator of photography, a position that has recently been claimed for him by the press.

*Successful Commercial Photography.*—The penny paper, the *Figaro Programme*, which has hitherto presented its readers with a carte-de-visite portrait produced by the Woodbury process, has found it impossible to give both picture and paper for this moderate amount, and has announced that the price will be double in future. It is to be hoped that when this innovation takes place, the publishers will use a little more care in the selection of the prints. When photographs are bought too cheap, no matter how they are produced, whether by mechanical or sun-printing, there is sure to be a goodly percentage of failure, for photographers cannot afford to make a selection of the better pictures, and supply these only. For a very slight increase of outlay in the production of the portraits, a much better average would be secured, for the printers would then be enabled to supply none but the most perfect copies. Selection is one of the principal points to be attended to, as every photographer knows: you can get a dozen cartes for five shillings at one house, and only half that number for the same money elsewhere; but the chances are, both establishments have printed the same number of copies from the negative, only in the latter case but the six best pictures are given you, instead of the whole batch, good and bad. A photographer cannot but gain reputation by supplying quality instead of quantity, and many a studio has gained a high position by sticking to the wholesome rule of never letting mediocre work go out to customers. It is no easy task to obtain a series of pictures all up to the highest standard, but there is never the slightest difficulty in weeding out prints that are really bad,

*Photography in Aristocratic Circles.*—Many of our readers know the Duke of Edinburgh to be an accomplished photographer, an art he acquired on purpose for his tour round the world in H.M.S. *Galatea*. We are now informed that Prince Arthur—or, as he is at present styled, the Duke of Connaught—is a good dry-plate worker, and spends much of his leisure in securing camera pictures. As a portraitist he is also an efficient, most of his models being members of the Royal family, who are never tired of sitting to the illustrious amateur. With such august personages in the ranks, photographers need be under no apprehension of their calling sinking into disrepute, as some of our correspondents have lately feared; in this country, more than any other, is the art adopted as a gentlemanly pursuit, and so high in rank are some of our most skilful amateurs that one of these days we may rather anticipate the profession to be entirely in the hands of the upper ten thousand.

## ON THE MULTIPLICATION OF MAPS AND PLANS IN THE FIELD.

BY CAPT. ABNEY, R.E., F.R.A.S., F.C.S.\*

WE next have to consider the multiplication of photographs. This is highly useful, as at long distances a photograph of an outwork, for instance, can be obtained, and by an ordinary enlarging process the details can be rendered visible without the aid of a telescope. It rarely happens, or could happen, that above thirty or forty copies of a photograph can be required. If only three or four be wanted, the ordinary silver printing process or albumenized paper can be utilized. If more than this number, papyrotypy can be employed. In this case a reversed negative, taken by means of a prism of total reflection placed in front of the lens, is made use of, and the negative printed on the gelatinized paper. As has been happily said, "gelatine, acted upon by light, has a discriminative power of absorption of water;" that is, just in proportion to the intensity of light acting upon it, so is it incapable of absorbing water. And after absorbing water, it has the same discriminative power of taking greasy ink.

Now it will be apparent that after printing a half-tone negative on this paper, and after soaking it in water, it will have the power of taking lithographic ink from a roller with different degrees of intensity. When inked in this manner, and placed in a common printing-press, it is manifest that an impression giving gradations of light and shade can be obtained by bringing ordinary paper in contact with it. The ink having been taken up by the paper, the roller, charged afresh with ink, can be passed over the gelatine, and more impressions pulled. Forty or fifty copies in this way can be obtained, and they are, of course, permanent, the picture being built up in printers' ink.

There is no novelty in this method. It is similar to the heliotype process and other mechanical printing processes; but it has this advantage, that in the latter it is necessary to obtain a solid layer of gelatine on a glass plate. The layer is readily sensitized, by the addition of bichromate of potash, and also resins to give it toughness; whilst the papyrotype paper can be kept in rolls of forty or fifty feet, and sufficient can be sensitized by floating on a bichromate of potash solution, as may be required. In the field it would be hopeless to try to prepare gelatine films on glass, as they require room, and also considerable time to dry. Forty-eight hours is, at least, required before they can be printed from, and the least particle of dust on the surface is fatal to good printing. The sensitized gelatine film only keeps a limited time, varying from a week to a month; whereas the paper is always ready. For the field the papyrotype process answers the purpose required, and has been adopted by the Engineer authorities.

At Chatham for ordinary work—such as illustrations of



reports—we use the heliotype process. A brief outline of it may be useful:—A glass plate is carefully levelled, and a solution of gelatine, chrome alum, bichromate of potash, and milk is poured over it. This is allowed to set, after which it is raised up and allowed to dry. This, as before stated, takes about forty-eight hours. When dry the gelatine film (which is sensitive, owing to bichromate of potash) is stripped off; one side is then hardened by exposure to the sun, and the other is then placed in contact with a negative. When it is judged that sufficient printing has been given it is slightly damped, and made to adhere to a pewter or zinc plate. It is next immersed in water for a quarter of an hour to swell up those parts on which the light has not acted, and also to soak out the bichromate of potash. The gelatine print is then placed on the bed of an ordinary printing-press, and a soft roller charged with greasy ink passed over it. The prints are obtained in the same way as described for papyrotypy. For a depot nothing could be better than this plan, and it has astonished me much that more book illustrations are not done by it. I produce a few samples of the work executed by this method.

The equipment for the field as regards photography consists of a waggon, of which I have a photograph here. It is a dark room in itself, and has all the usual fittings of such. It is furnished with four cameras—two to take  $12 \times 10$  pictures, and two  $8\frac{1}{2} \times 6\frac{1}{2}$ , and stereoscopic. Both the large cameras are of the bellows form, and expand to such a length that a plan can be enlarged to six times the scale. The battery of lenses is complete, ten being furnished of different focal lengths. They are all non-distorting, and give marginal straight lines. A complete outfit for the smaller cameras is likewise carried; that is, a dark tent carrying chemicals sufficient for three days' work. This requires two men to manipulate. With the smaller camera one man can carry thirty-six dry plates, and must work independently of the waggon, save in the matter of developing his pictures. The same waggon carries sufficient stores for a three months' campaign, every article necessary for the reproduction of plans and prints, as far as photography is concerned, being part of the outfit. The waggon is horsed by two horses, as a rule, though four are laid down for its transport in the field. The full complement of photographers is five, viz., one non-commissioned officer and four Sappers; each of these would have passed through the photographic course at the S. M. E., and have a thorough knowledge of photography in all branches, especially plain work.

The lithographic department is furnished with a waggon similar in all respects. It carries stores estimated to last three months. The size of the press is naturally limited, double-foolscap being the size of stone which it will take. Stones are not much carried, some half-dozen being all that are thought necessary. It carries, however, three dozen zinc plates for zincography. Provision is made for night work, and, in consequence, it is estimated that two non-commissioned officers and four men would be the staff required for work.

The printing waggon for typography and papyrotypy work in half-tone is also of the same pattern, and is supplied similarly with three months' stores. Two compositors (Sappers) and one non-commissioned officer are the authorized number of men attached for this duty.

The War-Office authorities have decided that each of these waggons shall be attached to the Telegraph Troop of Royal Engineers. Thus the whole branch of the intelligence department will be combined in one. As there will be one telegraph troop to each division of the army, it follows that every general commanding will be in an independent position as regards his collection and distribution of useful intelligence.

Thus the telegraph troop will connect his division with headquarters by telegraph. They will multiply his plans, photograph any point which may be of interest or use

during the operations, and print his orders for distribution to the subordinate commanding officers. This last point is one well worthy of attention. In old days, when each regiment had to copy out the the general orders from one order book, it was often the small hours in the morning before a regiment knew what time it would have to start. This worry is one well-known even in peace time to those who used to serve at Aldershot or in the earlier manoeuvres. I need hardly point out the necessity that existed of remedying it as far as possible.

We also have a mountain photographic equipment, which can be carried on the backs of three mules, weighing in all about 300 pounds. The size of the plates that can be used for photographs is  $12 \times 10$ . There is everything in it for the reproduction of plans for papyrotypy transfers; but as yet we have no mountain equipment for lithography, as there are certain difficulties in the way which are not as yet quite overcome. We have, however, a mountain telegraph and typographical printing equipment. The latter, joined with photography, enables us to produce copies of plans by papyrotypy.

I am aware that this paper must to many have been most uninteresting; but I was induced to bring the subject before the meeting to show that our authorities at the War Office are not averse to modern improvements in the small details of warfare. Our national sentiment can hardly be called "military," and the civilian element are always ready to believe that the British army can do little beyond being capable of mere physical fighting. A military man is not always fairly treated by his neighbours, and an absolute embargo has of late been laid upon the use of his brains by the right of patenting a useful discovery being withdrawn from him.

## THE PRACTICAL PRINTER IN AMERICA.

### VI.

#### MANIPULATIONS—PREPARING THE PAPER.

IN many respects the American practice of printing varies in greater or less degree from that of this country; but it is probably in the importance attached to fuming with ammonia that the greatest difference prevails. In America, fuming is universally practised, and Mr. Hearn gives minute details in regard to the mode of employing ammonia. It will be seen, also, that great stress is laid on drying the paper by heat, rather than spontaneously:—

"*Drying the Paper.*—The sheets of paper, while drying, should be placed about six or eight inches apart, so that they may not come in contact with each other, while damp, by means of slight draughts of air, thus spoiling the sheets of freshly sensitized paper—at least, those parts of the sheets where they meet.

"A gas stove is generally used for heating the drying room, partly on account of the little difficulty necessary to prepare it for heating, and then, again, on account of its small size. It does not occupy much room. An excellent one for the purpose can be obtained at a small expense.

"A soapstone, about six by eight inches in size, should be placed over the stove, and the gas turned on full head for a few minutes, until the stone has become very hot, then it may be turned down to a small jet. The reason why this stone is generally used is because it gives a diffused heat, and the sheets of paper may be placed quite near the stove, and also near each other, without waving enough to make them come in contact. The paper, in this way, is very quickly dried.

"During the summer it is not necessary to light the stove until all of the paper is silvered, and only then to dispel the slight moisture that may be on the surface.

"Usually during the summer season, while you are silvering the sixth or seventh sheet of paper, the first one or two will be dry enough to fume, so that an assistant



can go right to work at printing in about half an hour after you have entered the printing room in the morning.

"On damp days it will perhaps be necessary to keep the drying room quite warm for an hour or so in the morning, until you have silvered all of the paper necessary for the day's work.

"In the winter a stove is required a longer time than in summer, but there is no necessity for having the gas burning more than an hour or so during any day for the whole year round.

"It is on account of 'that terrible gas bill,' which is always coming around every month, that many photographers allow their paper to dry up spontaneously, and thus waste considerable time, when if a little attention was given to the time the gas should burn, the expense would be comparatively trifling. When the paper dries spontaneously, the surface of it dries dead.

"The paper should be dried quite quickly and thoroughly, for then the surface of it will be very brilliant and glossy, and the resulting prints will be much finer.

"Clean pieces of tissue or blotting-paper should be placed on the lower corner of the sheet, for the purpose of absorbing the silver solution which collects at that particular place, so that if the paper should happen to curl over, the corner would not come in contact with the rest of the paper in a wet state. To prevent the paper from curling up while drying, a stick having a spring nipper attached to each end of it is fastened to the lower part of the sheet.

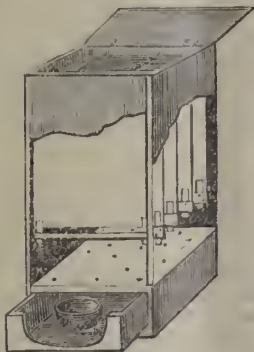
"*Fuming the Paper.*—The paper, when thoroughly dry, is to be fumed. The advantages of fuming the sensitive paper are these:—

"1st. The paper prints richer, quicker, and more brilliantly.

"2nd. The prints tone easier, and in the finished pictures are much more pleasing and satisfactory.

"The printed fumed paper (when the nitrate bath is in good order, and worked properly) will print a very rich purple tone, tending slightly to blue in the hair, background, and light shadows, while in the deepest shades the colour will be very brilliant and beautiful. It is well known by experienced printers that the better the paper prints the better will be the finished pictures, and since fuming undoubtedly improves the printing paper, it has come to be a very necessary part of the printing process.

"The construction of the fuming box is very simple. Take any common wooden box large enough for the purpose, and make a door of suitable size for it, which, when shut, will totally exclude all light. Make a false bottom



in this about six inches or so from the real one, and perforate it with holes of about the size a large gimlet would make. These holes should be very numerous, and at the centre of the board there should be, if anything, a smaller number of them, because the saucer containing the liquor ammonia is generally placed at the centre of the real bottom of the box.

"Mr. W. L. Shoemaker's box may suit many better. He says of it in the *Philadelphia Photographer*:—

"I claim as an improvement an entirely novel method of causing a perfect and even distribution of the ammonia fumes upon all parts of a sheet, so that, if properly silvered, the sheet will give a perfect and even print.

"We have, in Mr. Moore's establishment, used for nine years a box which conveyed the fumes from the space in the bottom through holes into the fuming chamber, the sheets standing upright. But the objection is, that part of the sheet nearest the bottom is stronger than top or centre, which, when printing as we do, in whole sheets, invariably show a decided difference in the two ends. To avoid this, and cause a perfect distribution of the fumes, I have constructed an improved box. We have used this box constantly for nearly three months, and fumed hundreds of sheets in it, and can with confidence offer it as doing everything I claim.

"The amount of ammonia is no greater than formerly used; the time of fuming is increased two to three minutes. In all the old boxes in which no draft is used, the paper becomes damp or limpid, and quite decomposed on a warm sultry day. In this box the paper remains perfectly dry, no matter how long fumed.

"There is another advantage: when the box is opened, after fuming, it does not leave fumes in the room.

"A sheet of paper is tacked, or fastened by the American clothes-clips, to the bottom of each slide; another is laid on the top. When all are filled, pour ammonia into the dish below, close the door, open the draft-slide, and the fuming goes on. The box we are using is intended for full sheets, 18×22.

"The dimensions of the inside (fuming chamber) are as follows:—26 inches deep, 19 inches wide, and 17½ inches high. The slides are 19½ inches wide, 24½ inches long. The space below, for fumes, is 2½ inches high. The fumes are carried to the back end of the floor of the fuming chamber, which has an opening 1½ inches across its whole width, which allows the fumes to ascend into the first slide space. The first slide fits flush against the back of the box, and has a space of 1½ inches across its front end, which allows the fumes to ascend to the second slide space. The second slide has its opening at the back end, and allows the fumes to come into the third slide space, and so on, until we reach the top of the box. The chamber for carrying off the fumes has its opening at the front end of the box. The pipe for conveying off the fumes is placed at the back end of this chamber, on the top of the box. We use a two-inch tin pipe.

"It is necessary that the pipe should be attached to a chimney flue, or attached, as we have it, by what iron-workers call a "jacket," on the stove pipe. This is the best way, as you are always certain to have a good draft, which can be regulated at the sliding front of the door of the fuming space.

"It may perhaps be better, since it does not retard the time of fuming so much, to have a fine wire gauze placed about the same number of inches from the bottom of the box as was recommended above for the false bottom, and then the fumes of the ammonia will ascend more rapidly; and to prevent the ascension of it so very rapidly at the centre, and thus cause uneven fuming—especially at the lower part of the sheet—a piece of pasteboard can be placed on the gauze directly over and covering the greater part of the dish.

"This box should be made large enough for fuming three or four sheets of paper at a time, which is all that is necessary to fume at one time in most galleries, especially during the summer, when the paper discolours so quickly after it is sensitized.

"The sheets should be suspended in the air by means of a spring clip. Four laths, about three inches apart, and running parallel to each other, should be fastened to the top of the box, and a slip fastened to each end.

"By placing two sheets back to back, you can fume eight sheets of paper at a time should you wish. Place



about half an ounce of aqua ammonia in the saucer on the bottom of the box, shut the door, and then time the paper.

"Some persons use carbonate of ammonia for fuming, on account of its cheapness, but I do not see any gain in it, for what is gained by its cheapness is more than lost by its very insufficient fuming. Carbonate of ammonia is very often used together with the aqua by pouring a few drops of the liquid on the lump of carbonate. This is said to be an economical way of fuming the paper, for with the use of the carbonate it is only necessary for a few drops of the stronger ammonia to be used, for there will then enough vapour arise to accomplish our object effectually.

"Fuming with ammonia imparts a slight dampness to the paper, which, during the hot months of summer, may be considered an advantage; but during the damp days, when the paper is always damp, it is otherwise, and consequently the use of some substance in the fuming box is required, which will take to itself the moisture, and leave the fumes of the ammonia alone to act upon the paper. Chloride of lime is a good thing, and answers admirably. This is a moist, greyish-white substance, having, in a slight degree, the odour of chlorine. It has powerful bleaching properties, and prevents the paper from turning yellow while fuming, a very common occurrence during the hot months with some brands of papers. It also improves the printing qualities of the paper, gives a virgin whiteness to the vignettes, and prevents the discolouration of them after printing, when the discolouring occurs only from the heat of the printing room. It is best, when you wish to use this lime in connection with aqua ammonia, to pour a few drops of the liquid in the saucer, and uncorking the bottle of the chloride of lime to sprinkle a little of it on the ammonia, and immediately close the door. A dry white vapour of the lime and ammonia will ascend, which will give to the paper the properties named above.

"The paper while drying will curl up, thus causing it to fume unevenly. To prevent this, the lower part of the paper should be held by a lath, which has a spring clip nailed at each end of it.

"The time of fuming the paper depends upon the state of the nitrate bath, the quality of the negatives, the temperature of the weather, and the brightness of the light. Paper silvered on an acid bath needs much longer fuming than when silvered on an alkaline or a neutral one; paper for intense negatives less fuming than weak ones; during the summer less fuming than during the winter; and on a dark day less fuming is required than on a bright day. All these things are to be taken into account, and the beginner will do well to note them carefully.

"As to the first of these—the printing bath—if the bath is acid, the time of fuming should vary with the amount of acidity, and that time can be ascertained by fuming until it prints a rich colour without showing any signs of weakness. If the bath is alkaline or neutral, less fuming is required than if the bath is acid.

"As to the second of these—the quality of the negatives—a hard, intense negative should be printed upon paper fumed a very little, as too much fuming increases the sensitiveness of the paper, and makes the negatives yield harsher prints than what would be the result if the paper were fumed a less time. A thin or weak negative yields the best prints upon paper that has been fumed a long time, as it increases the sensitiveness of it, and makes greater contrasts, which is just what we wish. As for the medium negatives, fume a medium length of time.

"The temperature of the weather is also a very important item in considering the fuming of the paper. During the hot months of summer the paper can bear less fuming than during the winter months, when the strength of the bath and also the time of the fuming must be increased.

"The brightness of the sunlight must also be thought

of, for when the light is bright and the weather good, more fuming is required (so as to prevent meanness) than would be necessary if the opposite were the case."

## BENGAL PHOTOGRAPHIC SOCIETY.

### RULES FOR THE EIGHTEENTH ANNUAL EXHIBITION, 1875.

I. The exhibition will be opened in February, 1875, and will remain open for a month.

II. The exhibition will be open to all good photographs, contributed by members of the society, and by photographers resident out of India.

III. Only such photographs as have been taken within two years will be allowed to compete for the prizes now specified. No photographs may compete for prizes at more than one exhibition, and no prizes will be awarded to persons who have not actually taken the pictures which they exhibit.

IV. The prizes will be awarded on the recommendation of three gentlemen appointed by the committee of the society, and the judges may in any case consider whether or not pictures attain a proper standard of excellence; the decision of the judges will in all cases be final. The judges will be empowered to recommend the award of extra medals for photographs which they may consider of special merit, although not falling within the scope of the prizes offered as below.

V. Photographs intended for the exhibition must be properly mounted, but need not be framed, and must be delivered to the secretary by the 15th January at latest, accompanied by a memorandum describing the subject of the pictures.

VI. The carriage of photographs sent from distant places must be prepaid. The society will endeavour to have photographs (which do not obtain prizes) sold for the benefit of the sender, if request to that effect be made; but in such cases a price list must accompany the letter of advice.

VII. Exhibitors must make their own arrangements for the removal of their photographs the day after the closing of the exhibition.

VIII. Photographs to which prizes shall have been awarded at the exhibition, excepting local portraits, will become the property of the society, for distribution among members.

IX. The committee will select from the prize photographs two for distribution amongst members of the society, and the exhibitors will be required to give up the negative of these pictures to the society, or to enter into reasonable arrangements with the committee for the printing of the necessary number of copies.

X. An admission fee of one rupee shall be charged daily to visitors of the exhibition, members and subscribers excepted.

The following prizes will be awarded, viz:—

#### By HIS EXCELLENCY THE VICEROY.

*Prize A—a Gold Medal.*—For the best single photograph in the room.

This picture is to be chosen first by the judges, and then to be excluded from competition for any other prize. *Open to all comers.*

#### By THE HONOURABLE THE LIEUTENANT-GOVERNOR OF BENGAL.

*Prize B—a Gold Medal.*—For the best series of at least six

\* Members wishing to compete for *Prizes B and E* are requested to state whether they are in the habit of disposing of their photographs for profit. photographic pictures, taken either in or out of India by any member of the society, not being a photographer by profession.

#### By THE SOCIETY.

*Prize C—a Gold Medal.*—For the best series of at least six landscapes, taken and printed in India by any member of the society.

*Prize D—a Silver Medal.*—For the best series of at least six portraits taken and printed in India by any member of the society.

*Prize E—a Silver Medal.*—For the best series of at least six photographic pictures, landscapes or portraits, taken either in or out of India by any member of the society, not being a photographer by profession, to be selected by the judges from those for which no other prize shall have been awarded at this exhibition.

*Prize F—a Bronze Medal.*—For the best series of at least six photographic pictures, taken in India by any member of the society, to be selected by the judges from those for which no other prize shall have been awarded at the exhibition.

*Prize G—a Silver Medal.*—For the best series of at least six photographs of Indian subjects, exclusive of landscapes and antiquities, taken by any member of the society.

*Prize H—a Silver Medal.*—For the best series of at least six photographic pictures of Indian antiquities, taken by any member of the society.



## BY THE PRESIDENT.

*Prize I—a Gold Medal.*—For the best series of at least six photographic pictures of any kind taken in Europe, America, or Australia, excepting those, if any, for which the Lieutenant-Governor's prize has been awarded. *Open to all comers.*

*Prize J—a Silver Medal.*—For the best series of at least six photographs of young children. *Open to all comers.*

## BY CAPTAIN J. WATERHOUSE.

*Prize K—a Silver Medal.*—For the best series of at least six landscape views taken out of India, to be selected from those for which no other prize shall have been awarded at the exhibition. *Open to all comers.*

## BY T. H. BENNETT, Esq.

*Prize L—a Silver Medal.*—For the best series of at least six photographs printed in permanent pigments, by the carbon process or any of the photo-mechanical processes. *Open to all comers.*

## BY G. L. KEMP, Esq.

*Prize M—a Silver Medal.*—For the best series of at least six photographs, reproductions of work of art, not smaller than 12 by 15. *Open to all comers.*

## NOTICE TO EUROPEAN CONTRIBUTORS.

Packages of photographs, intended for the exhibition of 1874-75, can be forwarded to India under the regulations of the Overland

\* The regulations of the Overland Parcel Post only apply to packages sent from the British Isles to India, and *vice versa*.

Parcel Post, full information of which may be obtained from the *Postal Guide*, or at the offices of the Peninsular and Oriental Steam Navigation Company, Leadenhall Street, London.

They may also be forwarded from London through the agency of the "Ocean Express," whose London Agents are Messrs. Nixon and King, 40, Regent Circus, Piccadilly, London, and 4, Agar Street, Strand. From Liverpool, through H. J. Simpson, Esq., of Messrs. Simpson, Lawrie, and Co., Liverpool.

Messrs. Kaltenbach and Schmitz, of No. 1, Alderman's Walk, London, also of Liverpool, Hamburg, and Bordeaux, have arranged to make up parcels of photographs for the exhibition, which will be closed and despatched from the above ports by the 1st November, 1874.

From Trieste, G. M. Rusea, Esq., will forward a parcel not later than the 10th November, 1874.

In order that the contributions may reach in good time, intending exhibitors are advised to forward their parcels from England not later than the 15th November, 1874.

Copies of the Rules will be procurable from the above agents, and any further particulars will appear in the photographic journals.

## LIGHTING THE SITTER.

BY FRANK JEWELL.\*

As there seems to be less skill displayed among the fraternity in lighting the sitter than in any other part of photography, and although much has been written on art principles as applied to photography, both as to posing as well as lighting, I shall endeavour to give a thoroughly practical and concise mode by which, with a little observation and some judgment, any one will be able to light a picture in an artistic manner.

It appears that many photographers lose sight of the fact that the parts of the face farthest from the eye should be darkest in tone, and the parts nearest should be lightest, with a gradation of tone from the light to the dark parts. I have seen many photographs by those high in the profession in which the reverse of the above is strikingly observable—that is, the back part of the cheek would be lighter than the front part. By a little thought you will see that this is an error. I want to impress the above on the mind of the reader seeking the key for excellence in lighting, as on this idea is founded what I am about to remark. We will suppose we are lighting a face in the old way—that is, with the most of the face in light. We will also suppose we are working with a top and side light, so arranged that any portion may be closed or opened at will. Should the sun enter in the least, some means must be adopted to stop it out entirely, and narrow frames, covered with tissue-paper, working on pivots close under the light, will do this effectually, while

they obstruct but little of the light. Any sunlight entering the room and striking the floor or walls will make bad reflections, and will spoil every effort to make the lighting as it should be. I have in my skylight-room a screen (similar to Kurtz's) about 4 by 3 feet, covered with white muslin, and fastened in a head-rest. This screen when placed over the sitter is about three feet from the head when at its highest point, but can be lowered at will. With the screen I control my light. My side-light is covered with material so thick that every trace of light can be effectually excluded, or let on at will. With this arrangement I get my high-lights. Bring your sitter out nearly but not quite to the centre of the room, and about four or five feet from the side-light, and turn the face so that the nose will point in a line parallel with the side-light. Move your instrument towards the side-light to get the view of the face wanted, and your background in the opposite direction to suit. You are now working diagonally across the room. Put your head screen in position over the head, taking care not to cut off too much of the light from the top. You will observe that there will now be a diffused light all over the face, only the side nearest the side-light will be a little the lightest. Now open a small portion of the side-light well in front of the sitter, which will let in a small amount of direct light, lighting up the prominent parts of the face. If the eyes are sunken, and there seems to be too much shade under the brows, lower the head-screen. This will light up the cavities, but will render the face flat in proportion. Now move your head-screen from over the head a little, and towards the shadow side of the face. This lets on more direct light from the top, and renders the face bold and vigorous again, with the eyes well lighted. The next thing to observe is, that the specks in the eyes (and they should always be there) are in both eyes alike. They should come on the top part of the iris, not over the centre, but more on the side nearest the side-light. Should the speck appear in one eye only, the face is turned too far from the side-light, and you get the effect I spoke of—that is, the back part of the cheek lighter than the front part, and to overcome this you must turn the face more to the sunlight, moving your camera to get the desired view, until this speck appears in both eyes. By turning the sitter more and more towards the side-light these specks are bound to come, and just as soon as they appear you may rest assured your sitter's face is lighted well and artistically. Of course you can make the contrast stronger or less by using your side-light. By this means you get that classic lighting of the nose, viz., a strong line of light down the bridge of the nose, and a high light on the tip, and you get the eyes perfectly lighted, and the rest will in every way be all right. This is my rule, and I have never known it to fail. To light a picture in the shadow style, do not move the position of the face, but move your instrument from the side-light to get a view of the other cheek. With, perhaps, a slight modification, the lighting will be just right.

## PHOTOGRAPHIC MULTIPLICATION OF DRAWINGS, ETC.—

Benneden states that paper, prepared as follows, costs but about one-sixth as much as the ordinary chloride of silver paper, and is as well adapted to the multiplication of drawings, and is simpler in its manipulation. A solution of bichromate of potash and albumen or gum, to which carbon, or some pigment of any desired shade, has been added, is brushed, as uniformly as possible, upon well-sized paper by lamplight, and the paper dried in the dark. The drawing, executed on fine transparent paper (or an engraving, or woodcut, &c.) is then placed beneath a flat glass upon the prepared paper, and exposed to the light for a length of time, dependent upon the intensity of the light. The drawing is removed from the paper by lamplight, and, after washing the latter with water, a negative of the drawing remains, since the portions of the coating acted on by the light become insoluble in water. From such a negative any number of positives can be taken in the same way.—*English Mechanic*

\* *Photographic Mosaics.*



# The Photographic News.

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## A LANDSCAPE STUDIO.

A WELL-KNOWN modern painter in water colours—whose work was, however, largely confined to the drawing-book school of art, in which the well-known rustic cottage, dilapidated cow-house, or old water-mill was an inevitable principal foreground object, whilst brown trees and blue distance were *de rigueur*—once remarked that “going to nature put him out.” Nevertheless, the best painters rarely paint any subject, figure or landscape, realistic or imaginative, without a careful study of nature: the living model for figures, and the whole face of nature for landscape. The same statement is true of all conscientious and capable photographers. They go to nature for their best effects. Some readers will smile for a moment, and mentally reply, “The photographer can do nothing else, as the camera cannot imagine a picture, and produce it as a painter can.” That is perfectly true; but the photographer can do something much worse. He can get a scene-painter to produce him backgrounds in which impossible arcades, trees and shrubs unknown to botanists, and marvellous mountains, vie with each other in confusing the effect of reality in the picture. But the conscientious and capable photographer goes to nature. The finest results in pictorial photography have been so produced. Mr. Rejlander has always worked in that direction. Mr. Robinson's work furnishes notable illustration: he has often travelled miles for a tree here, a stream there, or an effective distance still further on, each simply as elements in one picture. He has planted banks of wild flowers, grown trees, made lakes, where he could not find the required combination in nature. For it must be borne in mind that whilst nature in her truth must form the elements of a true picture, it is the province of art to select and combine nature so as to secure the highest pictorial effect. But whilst the most capable successful artists in photography have taken much trouble to build, or grow, or combine natural effects for especial pictures, hitherto but little has been done in the systematic formation of what we must term, for want of a more distinctive name, landscape studios, in which a multiplicity, and, in fact, almost infinite variety, of natural effects may be produced in conjunction with portrait figures, the lighting and general arrangement still being largely under the control of the artist.

Such a landscape studio has just been formed by Mr. Samuel Fry, at Kingston-on-Thames. Having the good fortune to find in the rear of his existing business pre-

mises a piece of vacant ground, he resolved to acquire it for open-air work. Nine months have transformed this piece of waste ground, which had become a receptacle for dilapidated pots, pans, and waste material of all kinds, which by some process of natural selection seem to find a home on any spot which is abandoned to neglect for a few months, from a rubbish heap into a singularly complete epitome of landscape effects and studio arrangements which can be desired. As a pleasant garden, bright with flowers, trees, shrubs, and water, admirable in arrangement, the place is charming, whilst for special photographic purposes it is most satisfactory.

It would be difficult to give a very complete idea of the arrangement by any verbal description; but we may suggest something of its character. The piece of land is not large—probably not exceeding half an acre—but, by skilful treatment, it is arranged to admit of pictorial effects suggestive of indefinite extent. At first glance it presents a happy mixture of shrubbery, parterre, and country lane. It is entered by a gateway leading to a carriage sweep sufficiently long and wide for a carriage and four to be driven into position for photographing, a large wall, forming the end of a building, being roughly plastered for use, if desired, as a plain background, the position being happily chosen to secure a north principal light, the south being shaded by rapidly growing poplar trees. Passing on beyond the carriage drive, we reach a rustic gateway, formed by stumps of trees, already forming a fine pollard head from having rooted where they were placed, whilst an abundance of creepers, wild and cultivated—pre-eminently a charming mixture of *trapaolum Canariense* and *clematis Jackmani* in very full flower—clinging around. Leaving the drive by this rustic passage, we are startled next by the sight of a lake; not very large, it is true, but big enough to float a capital practicable boat of about ten feet long. The lake is probably not thirty feet long by seven or eight feet wide; but, being made to form a bend in the grounds, its precise size will never be discovered in a picture. The path round this lake, and leading to the rustic boat-house, is a charming bit of wild growth. The path is thickly tangled with common British plants: here are brambles and briars; varieties of the dead nettle and common nettle; wild carrot, charlock, wild ranunculus, euphorbia, dog mercury, stitchwort; varieties of sonchus and cardus; several kinds of ivy; various grasses and rushes; and many more than we could note or remember. Various water weeds have already taken possession of the lake, which has facilities for changing, when necessary, the supply of water, and so preventing stagnancy. Leaving the lake, we perpetually meet with new effects, all especially designed for pictorial value. There are three or four different rustic sheds or summer-houses, surrounded with varieties of ivy and other climbing plants, and thatched with heath; large banks of choice bedding plants, and others with wild flowers. A large variety of conifers and other evergreens are used in completing the arrangement, and shade and pictorial effect are sought by means of rapidly growing deciduous trees, such as limes, poplars, sycamores, &c. The primary thing necessary to success which we find illustrated here is the evidence of a carefully wrought out design, in which a great variety of distinct and excellent effects are comprehended; and, second only to this, the rapidity and perfection with which the results have been obtained. Everything needed to be begun *ab initio* nine months ago. Upwards of a hundred loads of garden mould or loam, and upwards of fifty loads of gravel, had to be brought in; hundreds (probably thousands) of plants, shrubs, and trees had to be planted; and in nine months the place bears the blooming and full appearance of the growth of years. We can scarcely with propriety be so unfair to Mr. Fry as to recommend photographic visitors who may unnecessarily occupy his time; but to all who can, we should not the less recommend getting a sight of this landscape studio.



## A PHOTOGRAPH OF DOTHEBOYS HALL.

BY H. BADEN PRITCHARD.

A TOURIST photographer has quite sufficient difficulties to contend with in the ordinary way, with sensitive plates, camera, stand, selection of points of view, focussing, &c., and it is rather trying, therefore, when other vexatious obstacles have also to be surmounted. I was in Yorkshire the other day, footing it over the moors, through the beautiful Wensleydale, ascending Hillborough, and visiting such out-of-the-way spots as High Cup Nick, Cauldron Snout, and Conky Sear. Any one who believes it is necessary to go abroad—to Norway, or some such remote region—to get away from towns and every-day life, should cross from the "High Force Inn" in Teesdale to Hawes and Ullswater, and he will find a two days' march before him through a district as primitive and secluded as the greatest hermit would desire. During twenty miles of the way he will scarcely see a habitation or meet a living soul on the wastes of moorland, in the savage defiles, or about the foaming torrents, by which his way passes. We say way advisedly, for there are no paths in some parts, or, if there be, these are worse than useless, enticing the traveller from the right direction. There is only one guide to be relied upon in walks such as these, and that is the compass, aided by the Ordnance map; and one must place implicit reliance upon its direction, deviating neither to the right nor the left, however tempting the little paths on each side may appear. Nothing is so treacherous as these temptations. Over stony ground they appear plain enough, but once a swamp is reached, or thick heather, and they vanish altogether, or break up into half-a-dozen sheep tracks. "Follow your compass blindly," is the only advice to be adopted when the traveller is at fault; and when he is certain of having crossed the highest point, and only desires to descend, then let him follow the course of a streamlet or torrent carefully, which will lead him into the valley to a point where he will be enabled, by map or other information, to adopt a better path.

But I am straying from my subject. From Teesdale I came down to Greta Bridge, Yorkshire, possessed with an ardent desire to obtain a photograph of Dotheboys Hall. To the village of Bowes is a five-mile walk—Squeers and Nicholas, it will be remembered, drove over in a pony chaise—and then the problem was to find out the spot. The good people of Yorkshire are a frank, open-hearted race, but I had my misgivings about the inhabitants of Bowes possessing any love for Dickens after his exposure of cheap boarding schools, and I was very right in my assumption. However, by far the greater portion of the villagers have never so much as heard of Dickens, and a deep-set scheme on my part to have a pipe and glass one evening at one of the ale houses, and so get into conversation with the cronies of the place, was altogether unfruitful. The old landlady of the inn was, however, better informed, and after expatiating on the interesting character of the town, the old Roman encampment, the Norman castle, the grave of the lovers "Edwin and Emma," whose story has been sung by poets, I cautiously approached "Dotheboys." I at once touched an unpleasant subject, and my kindly hostess waxed wrath, and it was only by introducing the Romans again, and interesting myself in a big five-foot wall in the kitchen, which was supposed to date from that period, and which I tapped and examined with the assiduity of an antiquarian, that I found myself in smooth water again. I had found out two things, however: the locality of the building, and the fact that the village people looked with no favourable eye upon disciples of the great novelist. A search the same night in the dark brought me to my destination, and the next morning I made a further reconnaissance. A long, low, stone building, just outside the village, was the spot, and from the Norman castle, where I took my camera, a good, if distant, view of the front was obtainable without observation. To take the rear of

the building it was necessary to be cautious. I fixed on the place for setting down my camera—on a low stone wall—and looked with one eye to estimate roughly how much of the building I could get into the picture. I counted the paces to judge distance, and then focussed an object at a similar interval. My plate was put into the camera, the slide drawn, and, accompanied by a friend, we moved towards the building, set down the camera, uncapped the lens, and then turned away and became exceedingly interested in a dog cart standing in the road.

Securing the picture made me bolder. I passed the side door and looked in. It led into a yard showing the back offices, the well or pump that used to become frozen in winter time, and make it necessary occasionally to substitute a "dry polish" for washing on the part of the boys. There, too, was the stable where Smike would rub down the shaggy pony. If I could only get a picture of this I should be happy. Some children came out on seeing us, and called out, "There's noobody in; there's noobody in." This decided me. I calculated roughly the distance as before, slipped in a plate, and while my comrade conversed with the children in a moral tone, I placed my camera on a convenient step. Exposure began, and I had just given twenty seconds, when my companion, who had never ceased speaking to the children, whispered in French, "Gards toi."

I capped at once, and saw behind me a woman approaching with a big stick. I swept camera, plate, and slide under my arm, and made a clean bolt of it; but the object of the good Yorkshirewoman's indignation was not myself, but an unruly cow that had escaped into the road.

## PHOTOGRAPHIC JOURNALS AS CENTRES OF PROGRESSION.

BY W. T. BOVEY.

ALTHOUGH, as a rule, I expend but a slight amount of thought on the reception my communications meet with, yet, for the nonce, I frankly confess to an experience of pleasurable anticipation on account of the promising prospect opened up by my recent chance shot—a prospect which bids fair to restore to photography those feelings of zeal and of interest that gave an impetus to the industry of its old workers, whose combined efforts ultimately made our art what it now is—a legitimate offspring of science, twin-sister of art, a marvel of ingenuity and of rapid progression. As a matter of course, there are not found wanting those good-natured friends whose keenness of vision never fails when motives pass under review; and, equally as a matter of common occurrence, judgment is based on desire rather than on evidences of fact. The friends here alluded to have not scrupled to assert that my "pretended" imprudent suggestion was part of a well-matured scheme concerted between myself and the Editor to bring up what they are pleased to fancy are "the waning fortunes of the NEWS." Unfortunately, however, for the truth of the story, I had not seen the Editor for nearly three years, and no private communication by letter had passed on the subject at all. Hence the charge of collusion becomes an absurdity, and new motives are on offer for judgment, which, summarily disposed of, might be given in very few words—offshoots of over little natures indeed.

The existence of a friendly rivalry among photographic experimentalists, and the upholding of the dignity of our art-science, have from the beginning been objects of interest to me; and I may look back on the past with feelings of satisfaction, inasmuch as I have never missed an opportunity of advocating the cause of advancement, or of defending the art when its claims on respectability have been thoughtlessly assailed; and, consistently with a

\* It may interest those of our friends whose attention may be arrested by the phrase here quoted to know that the "fortunes of the NEWS," so far from waning, have never been in a more satisfactory condition.—Ed.



practice I have faithfully followed for over twelve years, I shall not now hesitate to point the way to peace and progression, even though my plans include in their design the elevation of tone and a general improvement of our journals, which, I am free to acknowledge, is the object I have now before me, and on which I purpose treating in my present written discourse.

Photography has no room for jealousies, it being cosmopolitan in its associations, and having no class interests to consider in its rapid transitions. Princes have not disdained to become initiated into the mysteries of the dark room; and, from the seat of royalty down to the humble labourer's home, rank in all its varying degrees has derived profit or pleasure from a practical companionship with the implements of our art.

An art-science like photography, that can fascinate whilst it enlists the services of the million, must perforce attract around it a republic of workers whose common interest it is to compare notes of experience, and to do what they can to promote the maintenance of good feeling. For photography, unlike most, if not quite all, other arts, is surrounded by so many invisible influences to make or mar its productions, that it becomes an absolute necessity for secret dodges to be ignored; that every discovery made should in some form become public property; and if this necessity is repudiated, the art must virtually suffer, simply because a link is found wanting in the chain that connects present knowledge with means of future improvement. This latter remark at once leads us to consider the services rendered by our journals.

I have already remarked that photography belongs to no class—that its workers count many thousands. I now direct attention to the important fact of an almost complete disintegration existing in the working elements just now briefly referred to; which last might be likened to rivulets that are made useless by isolation, and remain so until the channels are extended, and new directions given towards one focus, which forms the reservoir. From thence a fresh start is given, and that which before was scarcely of value is turned into a direction of general utility. To make the simile complete, I have only to direct attention to the numberless isolated experiences which from time to time have been collected together in the pages of our journals, and from thence distributed throughout the civilized world, to the advantage of every practitioner of the art, and with priceless benefit to the onward movement of photography. And thus in a few words is shown that if photography is to continue to progress, the photographic journals must perforce be regarded as indispensable centres of progression.

The purity of the water that is distributed from a reservoir must depend on the amount of care taken in conducting the process of filtration. In like manner the utility of matter emanating from photographic journalism in a great measure depends on editorial sifting and scrutiny. Unfortunately, even those who act as pilots of journals are mortal, and too frequently err in their calling. And to this, in some measure, is due the disasters which have temporarily clogged the growth of photography. For example, secret mongering is a legitimate subject for advertisement, but it is misplaced kindness to permit anyone to puff up his wares in unpaid-for letters to the editor, because the insertion of such communications lends importance to the writers. And many a "gull" has been plucked indirectly through such agency.

Again in the cases of differences of opinion that occasionally arise. Those who suffer real or imaginary grievances have certainly a right to make their wrongs known; but just as a man who acts as his own lawyer has a fool for a client, so are those who write under circumstances provocative of anger the most unfitted for calmness of expression. And it is within the proper duties of an editor to modify expression, and so soften down what otherwise must act as a torch to kindle fresh fires. In point of fact, a

melancholy example of this kind occurred but a few weeks ago. A nice little quarrel had been raging, the merits of which I care not to discuss. At all events, it must have been noticed that words grew wilder and wilder, until they culminated into the vilest of abuse, that not merely went the whole length of coarseness and wretched vulgarity, but, fearing that the persons lampooned, and drawn, evidently, from familiar pot-house models, should, in such characters, scarcely be known, the foolish writer did not scruple to introduce ills of bodily affliction, wrought by an inscrutable providence, into his word picture, which, for the honour of our art, I sincerely hope has found no admirers to applaud. The editor was clearly wrong in permitting so monstrous a folly to appear in his pages, and if he imagines that the applause of a few represents the opinions of the many, the sooner he is convinced of his error the better it will be for his paper. And the more advantageous will it be for himself.

The NEWS of last week was, to myself at least, a reminder of what our journals used to be; and the ready responses to the invitation issued but a week before by its editor are so many proofs that the old spirit of generosity was only suspended—that photographers are now, as they ever were, ready to turn on supplies of information if they can be persuaded that photographic journals may, without fear of abuse, be used as centres of photographic progression.

Having unburdened my mind of thoughts which have for their object the addition of interest in the art, and of success to our journals, I trust for a while to find no more occasion for lecturing, as I hope to be able to expend some little time on those subjects made matters of queries.

#### NOTES ON COLLOTYPE PRINTING.

BY CAPTAIN WATERHOUSE, R.E.

IN the number of the PHOTOGRAPHIC NEWS for the 9th January I see that a correspondent, signing himself "Bichromate," has been enquiring why the colotype plates prepared according to my formula, with tannin, cannot be sensitized by the addition of bichromate to the mixture of gelatine, tannin, and soap. In my early experiments with the process I found that the bichromate could not be added to the mixture without causing a precipitate, and therefore the plan of sensitizing in a separate bath was adopted; and though it necessitates a double drying, it has been found to possess the advantages of enabling the gelatine film to be prepared at any time quite independently of the sensitizing, and to be dried in the open air, a mode which seems, in suitable weather, to give better results than drying by artificial heat in a stove.

My attention has been drawn quite lately to the subject by seeing that, in the second edition of his excellent "Instructions in Photography," Captain Abney, when describing my method of sensitizing, says, "If the same proportion of bichromate salt be added to No. 1 (the solution of gelatine) as given in the heliotype process, this re-drying may be avoided." I therefore repeated the experiment, but found that a thick clotted precipitate was formed immediately on the addition of the tannin and soap to the mixture of gelatine and bichromate. In a recent experiment, in which the bichromate was added to the mixture of gelatine, tannin, and soap, a very few drops of a saturated solution of bichromate of potash sufficed to turn the mixture into a stiff jelly, and to render the gelatine insoluble and useless. It would appear, therefore, that the plates must be sensitized in a separate bath.

It will, I think, be found impossible to combine the tannin with the bichromate in an *alkaline* mixture without producing chromium compounds, which would have the property of rendering gelatine insoluble. In an *acid* solution it might be different. I have not tried this, but will take an early opportunity of doing so, and will let you know the result if it should appear worth recording.



## NOTE ON SALTS OF IRON SENSITIVE TO THE ACTION OF LIGHT.

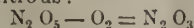
BY WILLIAM H. WATSON.

As has been frequently remarked, a fact in science once clearly ascertained, is almost always productive of good, at once or hereafter; so I trust the sensitive salts of iron may prove to be in the wide field of photography.

In my communication which appeared in the pages of the PHOTOGRAPHIC NEWS for the 14th inst., I alluded briefly to some experiments which showed that ferrous tartrate is acted upon by the photo-actinic rays. I have continued, since then, my experiments on this point, and have found that ferrous citrate is also sensitive to light, and about as much so as the tartrate. In testing these salts in this respect, I floated for some ten to twelve minutes on a solution of the salt, dried, and exposed under the negative. The result was a faint image upon those parts of the paper on which the light had shone—a reddish brown deposit—ferric oxide.

This is sufficient proof of the sensitiveness of the salt; but to make the image more dense was then the object. This I readily managed by the use of gallic acid. The paper, after exposure, was first well washed in warm water, then in weak acid, again washed in water, and afterwards dipped into a solution of gallic acid. The iron remaining in the paper after washing combined with the gallic acid, resulting in the formation of the gallate of iron (black). This is the black colouring matter contained in ink, so that if at any time, with further improvements, this process were adopted for printing, the prints would be equally as stable as pen and ink etchings.

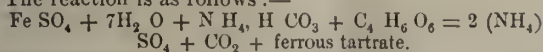
From this it would seem that the action of light is one of oxidation; and yet, from other experiments, it appears to be deoxidizing—as, for example, the change in nitric acid, from that to nitrous:—



Ferrous citrate or tartrate may be prepared as follows:—

1. By adding to a solution of ferrous sulphate, one of potassic, sodic, or ammonic tartrate or citrate.
2. By dissolving metallic iron in tartaric or citric acid.
3. By precipitating from ferrous sulphate, by ammonic carbonate, ferrous carbonate, and by dissolving this in the acid.

The reaction is as follows:—



Ferrous salts are of course changed from the ferrous to the ferric state on exposure to the air. To avoid, then, precipitation of ferric oxide, a little acid should be added in excess. The paper, after preparation, should be kept under pressure.

It seems only reasonable to suppose that the salts formed by the combination of the other organic acids with ferrous oxide would be sensitive also, this from their similar compositions, as under, but not proved, so far, by experiment—

Tartaric acid	...	...	...	...	$C_4 H_6 O_6$
Citric acid...	...	...	...	...	$C_6 H_8 O_7$
Malic acid	...	...	...	...	$C_4 H_6 O_5$
Lactic acid	...	...	...	...	$C_3 H_6 O_3$
Succinic acid	...	...	...	...	$C_4 H_6 O_4$

I have made experiments with ferrous acetate also, but failed to get the same result as in the former cases.

Apart from what may be the practical photographic nature of the matter, it is one at least worth knowing, from a purely chemical point of view.

I enclose, Mr. Editor, two prints.

No. 1. Paper floated on twenty to thirty-grain solution of ferrous citrate, dried, and simply exposed under negative after keeping for three days.

No. 2. Paper prepared as No. 1. After exposure was washed in water, washed in weak acid, again washed in water, dipped in solution of gallic acid, washed, and dried.

I may add that they were exposed about three-quarters of an hour in direct sunlight.

## ON PHOTOGRAPHY IN RELATION TO THE TRANSIT OF VENUS.

BY CAPTAIN ABNEY, R.E., F.R.A.S., F.C.S.\*

As is doubtless well known to all, there will be an application of photography to register the passage of Venus across the sun's disc, and it may not be amiss to give an outline of the processes that will be adopted.

It has been determined by the Astronomer-Royal that at each photographic station a photograph shall be taken every ten minutes during the transit, and it has been a matter of considerable labour to work out a process that will admit of such a large number of negatives being taken in a hot climate. In Kerguelin's Land it would be perfectly feasible to adopt the ordinary wet process, the low temperature admitting of it; but in a temperature of 90° Fah. the evaporation of the volatile constituents of the collodion would render such a process inapplicable, as all practical photographers will admit. In India, where I have worked extensively, coating two or three plates in summer in a large-sized tent has sometimes proved injurious. With such experience I venture to think that it would have been madness to have trusted to the wet method for four hours, unless the conditions of *personnel* of the parties was considerably altered. Sir G. Airey, after much anxious deliberation, and with the advice (and that not hastily formed, by any means) of Mr. Warren de la Rue, determined to adopt a dry process, if practicable. After considerable experiment, conducted at Chatham, it was determined to adopt a collodio-albumeu dry process, using a highly-bromised collodion and strong alkaline development.

There were several advantages in this: first, at the critical time the photographers would have nothing to distract their attention excepting placing the dry plates in the slide, and developing every twelfth plate exposed in order to regulate the exposure; second, the irradiation was much diminished by the use of albumen—a point of no small importance when measurements have to be taken; third, the shrinkage of the film is reduced to zero when the plates are properly prepared.

In regard to the first advantage claimed, it will be apparent that plates prepared at leisure will be superior to those prepared in the hurry of the moment, as would be the case with wet plates. The chances of stains and spots are diminished tenfold, and one may expect a much cleaner picture.

The true explanation of irradiation has been argued of late in *Nature*, and, perhaps, I may be pardoned for dwelling an instant on that point. Irradiation may be divided into two kinds, viz., that occurring from reflection from the back of the plate, and that occurring from reflection from the particles of bromide or iodide of silver in the collodion film. The first requires no explanation. If a film be sufficiently dense, and of such a colour as will cut off the most actinic rays of the spectrum, no irradiation on that account need be anticipated. Iodide of silver fulfils this condition much more fully than does bromide of silver, the former approaching to a yellow colour, whilst the latter is almost white. A thin layer of iodide is much more efficient in cutting off the blue end of the spectrum than is the bromide; hence, if irradiation through reflection from the back of the plate is to be overcome, it is wise to use a certain proportion of iodide in the collodion. Practically, I have found that in the dry process under consideration, three parts of iodide and two of bromide give the best results, without diminishing the sensitiveness of the film.

The second cause of irradiation, viz., reflection from the particles of bromide and iodide, is not hard to explain. When a colloidal body, such as gelatine or albumen, is brought in contact with a soluble salt of silver, the resulting compound is found to be one which is singularly free from this defect. If a ray of light be allowed to fall at a right angle upon a very thin cell containing an emulsion of bromide of silver, the cell having worked-glass

\* Read at the meeting of the British Association at Belfast.



sides and ends, it will be found that the ray of light will be scattered considerably, apparently in a logarithmic curve; the surface nearest the source of light will not be affected, but it will spread from that surface towards the other, a physical line of light becoming an area. If, however, a collodion salt of silver be introduced it will be found that this area is much diminished, and, for small distances, becomes inapplicable. In connection with this I may mention that bromide plates, even when backed with a non-actinic backing in optical contact with the plate, will give irradiation with alkaline development, while with acid development the irradiation will disappear. The explanation is not far to seek. The alkaline developer reduces the silver *in situ*; the acid developer deposits silver on the surface, and where there is most attractive force. In the former case the dispersed light acting on the interior of the silver causes the necessary change in the bromide of silver, and affects the reduction. Daguerreotype plates are not free from irradiation, as has been supposed, although, owing to the extraordinary thinness of the iodide of silver, but little effect can be traced unless a very prolonged exposure be given.

In the dry process selected for the transit of Venus it has, then, been thought desirable to have a rather dense film, containing a proportion of iodide of silver, and a colloid body—albumen—as preservative. I am not unmindful of the fact that different pyroxylines more or less affect irradiation, and I have altered the constitution of the pyroxyline in the collodion we shall use by adding certain proportions of water. This materially aids the annihilation of irradiation from these plates.

For registering the time of external and internal contact of the planet with the sun's disc, the method known as "Janssen's" has been adopted, viz., causing a fresh portion of a plate to be exposed every second during the critical time to the sun's limb at that part where the contact will take place. Mr. Christie and Mr. de la Rue have both devised a slide for this purpose. The English parties use that designed by the former, whilst Colonel Tennant will use that by the latter.

Shrinkage in the film has been carefully looked for by Dr. Vogel, of Berlin, and also in this country by Colonel Stuart Wortley and myself. Photographing a grating of two hundred lines to the inch, by contact printing, and measuring the results, I have been unable to find any alteration in the distances of the lines at any part of the film; hence I feel confident that any shrinkage that can take place will be so small as to be negligible. The Russian parties are, I believe, going to use a grating material of cross wires. If shrinkage did occur, this would be necessary, but it seems almost useless—in fact, hurtful—when there will be none. There must be a certain error introduced due to the grating itself. The method of finding the angle of position of the wires will be determined photographically. Two pictures of the sun will be taken at an interval of one minute on the same plate. The line joining the intersection of the sun's images will give the angle of position of the wires when measured by the micrometer.

At each station the photographic party will consist of one officer and three Sappers, all of whom have been trained in the use of the photo-heliograph and the process employed. A drill for each operation has been devised, and it is anticipated that the dangers of excitement during the critical time have been overcome by this arrangement. Practice on a mock transit has ensured a thorough knowledge of each phase of the phenomenon, and I apprehend that discipline, combined with a trust in their superiors, will have annihilated one source of failure.

#### THE PHOTOGRAPHING OF THE MOON.

In the Mathematical and Physical Section of the British Association the Earl of Rosse, F.R.S., exhibited a large photograph of the moon, which, he said, had been lent to

him by his friend, Mr. Warren De La Rue, who had much to do with the construction of the great reflector of the Melbourne telescope, with which the picture was taken. Although the great telescope at Melbourne had been in use for some time, it was the first really successful photograph of the moon which had been taken with it, partly because the reflector had been used for other work, and partly because the nights on which good lunar photography is possible are so very few. Currents of air of different densities were usually moving in large volumes one above the other, and these so refracted the rays of light as to cause the stars to appear to the eye to twinkle, and to cast unsteady images of the different parts of the moon when the reflector was used in the attempt to obtain photographs. Hence not only must the sky be clear, but the air very still at all elevations before good lunar pictures can be obtained; so it was not surprising that in the short period which elapsed after the reflector was made, and before it left Dublin, no good photographs were taken. Before the advent of the photograph he was then exhibiting, the best that had ever been taken had been obtained by Mr. Rutherford, of New York, who used a refractor for the purpose; the lens had been made specially for the work, and had been ground to bring the blue and violet rays of the spectrum to a sharp focus on the sensitive plate, since these rays, and not those which are most luminous to the eye, are those which exert an influence over the chemical substances contained in photographic films. Mr. De La Rue had taken many beautiful photographs of the moon, at his observatory at Cranford, and was noted for his skill in the work; but he believed that Mr. De La Rue was of opinion that Mr. Rutherford had obtained a better photograph of the moon than himself, the atmospheric conditions chancing to be so good on one particular night. Although Mr. Rutherford had obtained his good picture so far back as 1865, he had never been able to obtain another to equal it since; therefore the single picture did not prove that a refractor was better than a reflector for lunar photographic work, but simply that atmospheric conditions were exceptionally good on a particular evening. He had carefully compared Mr. Rutherford's picture—of which he possessed a copy—with the one taken with the Melbourne reflector, and thought that the latter was slightly the better of the two. He could not, however, speak with certainty, and should like to have the aid of good photographic critics. Both pictures had been enlarged from the original negatives, and Mr. Rutherford's had been much more enlarged than the other. The original negative taken with the Melbourne reflector was about three and a half inches in diameter. The phase of the moon was nearly the same in both pictures.

Mr. James Glaisher, F.R.S. (of the Royal Observatory at Greenwich), said that Mr. Rutherford had recently taken a photograph of the moon nearly as good as the celebrated one which he took nine years ago. He knew this, because Mr. Rutherford had recently sent him a copy of the last one.

Professor Jellett said that after the great reflector first reached Melbourne some unfavourable remarks were made about it, but the results before them showed that it was a good instrument. He was glad to say that that admirable telescope had been made in Ireland.

#### Notes and Queries.

##### PHOTOGRAPHING FLOWERS.

SIR,—I have often seen wild flowers growing near an old mill in Cheshire, beautifully white, without losing in detail, where the fine mill dust had precipitated itself on them. Could not this be applied to photographing flowers?

I should, however, prefer violet powder dusted in a fine cloud from a puff or muslin bag, to shaking a flour-bag over them. I think this would have met the difficulty of "O. G. R." with the sunflower, also that of the lady.

H. GREGSON.



## Correspondence.

## THE STATUS OF PHOTOGRAPHY.

SIR,—I am glad to see this discussion revived, and beg to say a few words on the subject.

The principal cause of the low estimate the public have of photography is due to the low prices for which photographers are content to work; and so long as this is the case, so long will the public despise us as a body. To attain respectability, we must estimate ourselves justly, and put a proper value upon our time.

How often does it happen that, from causes entirely beyond our control, an unsatisfactory or bad photographic portrait is produced! Our clients, as a matter of right, demand a re-sitting, which, if not accorded readily, leads to unfriendly discussion, loss of business, &c. Re-sitting is a subject of the greatest importance, and ought to be regulated by a committee of professional photographers. In my practice as a photographer, I am continually told by clients that Messrs. So-and-So, without hesitation, grant them any number of re-sittings. I have been told by ladies that they have had as many as twenty re-sittings without extra charge. It is difficult to meet such wild and untrue assertions with any degree of patience; but the fact that such assertions are made proves of how little value our time is considered.

Another cause of the low estimate in which we are held is our craving to be considered artists. Artists cannot and will not allow photography to be a fine art. That the public do not consider photography a fine art is evinced by the exclamations they make use of in looking at photographs:—"Here is a lovely photograph, just like marble!" or "Here is a fine photograph, as sharp as a needle!" or, again, "What a beautiful photograph: how clear, how bright, how smooth, how soft!"—never "How like nature!"

Some time ago the subject of the claim of photography to be considered a fine art was discussed in your paper at great length, with no definite result. A letter from Mr. Cocking appeared to me to settle the whole question. In a dream, he saw a photographer and an artist, with their materials, entering into Madame Tussaud's exhibition, and each in his way, and with his different materials, produced a picture of one of the historical groups there exhibited. On comparing the two pictures, the photographer's was found to be only a mechanical representation of a series of dummies; whilst the artist had infused into his group, individuality, expression, ideality, imagination, and other intellectual qualities; he had, in fact, painted his own mind, his picture in consequence was interesting and valuable, inasmuch as it expressed qualities apart and distinct from the groups from which he had made his picture.

Every photographer who will consider this subject cannot but perceive that his art is limited to imitation, and that he can only reproduce what already exists in his model. Imitation is only one quality, and the lowest, of a picture having any pretension to be considered a work of fine art. Before the status of photography can be determined, this question ought to be finally decided, and photographers ought to be content to be photographers, and leave art claims alone.

No doubt a photographic society, the membership of which could only be attained by thoroughly competent photographers, would tend to raise their position; but such a society ought to have for its president a professional photographer, and not, as Mr. Aldridge suggests, a man in a different profession. Scientific men, eminent men, and amateur photographers, might be invited to become honorary members. We have only to follow the example of the Royal Academy and other fine art societies, who have always had professional artists to preside over and conduct their affairs. Photography has a position and aims of its own, distinct and apart from fine art, and a man of ordi-

nary abilities might well be content if he succeeded in mastering all its difficulties. A photographic society whose members were only photographers of acknowledged ability would soon establish a position, and would be able to give laws to govern and guide the respectable members of their profession—in fact, just as the Royal Academy did. Membership of such a society would be regarded as an honour by photographers, and would be a certificate of merit in the eyes of the public.—Your obedient servant,  
PHOTOGRAPHER.

## PICTORIAL BACKGROUNDS ADDED TO NEGATIVES.

MY DEAR SIR,—In reply to your correspondent "W." I beg to enclose you a specimen of the background printing referred to. I also enclose a print from the twin negative without the pictorial background, so that you may see that the conditions are changed exactly in the proportions I said they would be—i.e., the negative slightly intensified. I have printed several copies, and see no difference in the latter impressions.

The bichromate can, however, be washed out without any injury to the adjunct background; but I maintain that after-washing is quite unnecessary. If any of your readers will kindly call, I shall be most happy to show them the unwashed negative, and the result, in the form of a print similar to what I send herewith.—I remain, dear sir, yours truly,  
J. WERGE.

P.S. The prints I send are not high class specimens either of photography or the application of the process. I simply took the first portrait and pictorial negatives I laid hold of, and combined them to confirm my first idea.

[The prints forwarded bear out Mr. Werge's statement. The print from the negative with the bichromate shows that an effect of intensification is produced; but the intensification has produced a harsher, coarser result. We append Mr. Werge's instructions, which he encloses.—ED.]

Take the sitter against a dark background, and finish the negative in the usual way, but do not varnish it. Allow the negative to dry, wet it again, and pour over it the sensitive mixture of dextrine, &c.; drain, and dry over the spirit lamp (or, better still, lay the negative on a hot-water drying-bath in the dark room, or by lamp or fire light). When dry, and while still warm, place the pictorial negative from nature, or from an engraving or painting, in contact with the other negative, face to face, and expose, pictorial negative uppermost, for about twenty minutes in a strong light. Then take the negative into a dull white light, or strong yellow light, and remove the pictorial negative without scratching. Lay the portrait negative on a retouching desk, and apply the plumbago all round the figure with a camel's hair brush until the pictorial background appears, and is dense enough. If there should be any difficulty in obtaining sufficient density, breathe over the part, but be careful not to spot or touch the surface while the vapour is upon it. As soon as the vapour has evaporated, apply the plumbago again, and the picture will soon become visible and dense. Then dust off all the superfluous plumbago, and varnish as usual.

By this means an infinite variety of pictorial effects can be produced cheaply and quickly without employing pictorial backgrounds behind the sitters; and, by a judicious choice of a picture, or part of a picture, the most artistic effects can readily be obtained; and the backgrounds of Reynolds and Lawrence, which are always beautiful and appropriate, may be employed and repeated *ad infinitum*. Skies can also be added to landscape negatives, and many of the troubles and annoyances of combination printing may be avoided by the employment of this process.

## SENSITIVE SOLUTION.

Dextrine...	...	...	...	1	drachm
Sugar-candy	...	...	...	1	"
Bichromate of ammonia	...	...	...	$\frac{1}{2}$	"
Water	...	...	...	5	ounces

When all dissolved, filter for use.

## MR. TILLEY'S COMBINATION PRINTING.

SIR,—In reply to Mr. Bovey, I am much obliged to him for his advice, and shall not fail to think the matter over before obtaining a patent for photographic combination.



My idea was that if I took out a patent, photographers could place at the foot of their cards the following, which might create more sale: "Patent Combination Print." Still, if I do not patent it, the words "Combination Photograph" could be used.

I would advise Mr. Bovey to work in quite a different way to find out the method by which I produce my combination. I think the plans Mr. Bovey has put forward are good, but I know they must all take too much time to compare with mine.

In answer to "W." of last week, I can only say that it is not the powder process, as I should think that would take more time than any plan Mr. Bovey has put forward. I claim for my process that of being the quickest, and, to compare results, I think it would be the best in preserving the entire portrait, even to the hair of the head and beard.

My process being so very simple in its working, it appears to be the more difficult to find out; and as "W." says it is tantalizing to wait the time I have stated, I must say that it is of no advantage to me to wait that time, but as I have given the offer, I must wait the time.—Yours respectfully,  
W. TILLEY.

### CORNWALL POLYTECHNIC EXHIBITION.

DEAR SIR,—If the catalogue of the Cornwall Exhibition is an authority, a second silver medal was awarded to a photograph entitled, "A Warwickshire Lane." Will your correspondent be kind enough to explain why he omitted this in his list?—Yours, &c.,  
E. S.  
Leamington, August 31st.

### Talk in the Studio.

CHARGE OF EMBEZZLEMENT.—A paragraph in a local paper states that Charles Stevens, a young man who presented a very respectable appearance, was charged by his employer, Mr. Howe, photographer, of Duke Street, Cardiff, with embezzling the sum of £1 4s., and purloining a number of photographs. Mr. Blelloch prosecuted. The prisoner was employed by Mr. Howe as a negative printer, but he did not reside in the house. The evidence indicated that he had received several sums of money on behalf of his master, and Mr. Howe experienced considerable difficulty in getting him to prepare a statement of the amounts. Ultimately the accused made out a list of the sums received, showing a total of 24s.; and he then admitted that he had not the money with him. He left the house ostensibly for the purpose of getting it, but failed to return until the following morning, when, in a default tone, he informed Mr. Howe that he had spent the money. With regard to the photographs, it appeared that a married woman named Ballinger obtained the negative of her likeness from a young man formerly employed by the prosecutor, and gave it to the prisoner, who printed several copies without the knowledge of his master. In her evidence, however, Mrs. Ballinger stated that she intended to pay Mr. Howe himself for the photographs. The prisoner admitted the embezzlement, but asserted that he appropriated the money thinking that his master would deduct it from his wages. The prosecutor intimated that he merely wished to make an example of the prisoner, as he had been served in a similar way before, and had no desire to press for a vindictive punishment. The Bench sentenced the accused to a month's imprisonment with hard labour.

BRITISH ASSOCIATION.—The next meeting of the British Association will be held at Bristol under the presidency of Sir John Hawkshaw, C.E., F.R.S.

### To Correspondents.

C. A. B.—A cabinet lens—that is, one made especially by the opticians for cabinets—will answer for that size and for card heads and three-quarter-lengths very well. Both the makers you name have a high reputation, but we cannot advise you in this column as to which is best without assuming an invidious position.

J. C. S.—It is customary to send photographs to exhibitions framed and glazed. Such a course is necessary both for protection of the pictures and for effect in the exhibition.

H. L. (Bath).—Bichloride of platinum is used for blacking the brasswork of lenses and stops. Make a two-grain solution of bichloride of platinum, to which a few drops of the negative bath may be added. This must be applied with a camel's-hair pencil to the brasswork, which must be first thoroughly cleansed from dirt or grease. After the requisite effect is produced, rinse with clean water, dry, and polish with black-lead.

PRIMUS.—We should prefer plan No. 2, in which you will secure a better length and a good north light; but either plan will allow you to work pretty well. The chief difference will be in the facility for producing groups. With twenty-two feet length you will be able to produce full-length card portraits with the 2B lens of the maker you name, but you would not have length for groups of three or four persons full-length; whereas with the twenty-seven feet you will have no difficulty in getting the camera far enough back. 2. The maker will give you the best advice as to the two lenses you require.

RETAIL.—Write to Messrs. Marion and Co., of Soho Square.

F. T. D.—Minute white and yellow spots may proceed from various causes. Those on the cards forwarded to us a week or two ago were quite distinct in their character from those sent now. The former, we have no doubt whatever, were spotted by the bronze powder used in printing the mounting cards; whilst those sent now do not suggest such an origin. We cannot with certainty say the cause of the latter. They may proceed from minute air-bubbles formed on the surface in the fixing bath. Such minute bubbles are very apt to form under some conditions, and to adhere very tenaciously. The fact that some prints float, whilst some sink, would probably depend upon the presence of these minute bubbles. A print covered with them would be buoyed up and float, whilst a print without them would sink. Some samples of paper are more subject to such spots than others. We have known a sample of albumenized paper, good at first, gradually become subject to them, becoming worse and worse during six months' keeping. Probably some decomposition had been set up in the albumen surface. Keeping the paper in a damp place will tend to this decomposition. Your galvanized iron washing pan should not be used without being thoroughly varnished. 2. The imperfect working of an old bath is rather due to accumulation of contaminating matter than to the bath becoming weak or exhausted, and such a bath often gives irregular markings on the negative.

BRIGHTON.—There is not, properly speaking, such a thing as an instantaneous view lens, although there are various rapid working view lenses. Instantaneity depends as much upon the light and the subject as upon the lens. A good portrait lens is often used for producing instantaneous views. We cannot with propriety recommend any special lens in this column.

TWIN.—The addition of from half a grain to a grain of bromide of cadmium to each ounce of collodion will often increase detail and decrease density. But a great deal may be done by modifying other matters without touching the collodion. Slightly increasing the time of immersion in the silver bath will be useful, giving full exposure will be useful, and increasing the strength of the iron developer will be found useful. Use (say) a forty-grain iron solution with twenty minims of acetic acid to each ounce, and use a full quantity of it on the plate, so as to dilute the silver solution which is on the plate.

G. R. GILL.—Surface fog, which may be rubbed off with the finger, is very troublesome, and sometimes very difficult to trace to a cause, the more so as it may proceed from many causes. We can suggest some of the possible causes, but we cannot, of course, tell which cause is in operation in your case. Under certain conditions, the use of a newly mixed iron developer will produce the result, and a little age in the developer, or the addition of a little old developer, will cure it. Sometimes impure acetic acid in the developer will cause it. Sometimes the use of slightly decomposed collodion will cause it, when there is the slightest under-exposure. Sometimes light in the dark room will cause it. Sometimes the use of a nitrate bath which is charged with organic matter will cause it. There are also other causes, but it is probable that one of these causes is in operation in your case.

H. J.—The letter has been posted.

H. G.—We find that the revival of the column of NOTES AND QUERIES has given general satisfaction, and if all readers will contribute something of experience it will doubtless prove very valuable.

H. T.—We do not know of any one who repairs ebonite baths, and it is very doubtful indeed whether an ebonite bath can be repaired.

G. BRADAZON.—No; we think not.

W. CAMPBELL (Bengal).—The stamps sent were rendered valueless by the method in which they were forwarded, and were insufficient by sevenpence to cover the postage of the YEAR-BOOK.

Several Correspondents in our next.



## The Photographic News, September 11, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### HOW TO WRITE A GUIDE-BOOK—TINTED PAPER IN PORTRAITURE—TRANSPARENT PAPER FOR DRY PLATES.

*How to write a Guide-Book.*—One might soon become a Murray, or Badaecker, and write guide-books nowadays with great facility, with the aid of a good selection of the charming glass photographs prepared for the stereoscope by Léon et Lévy, of Paris. A gazeteer would furnish sufficient facts about population, history, and geographical situation, and then one has merely to sit down before one of those multiple stereoscopic stands, turn the handle, and look at the series of views that pass before your eyes. Suppose you want to write a book about the Rhine. Very good; you need not run off and purchase a ticket at Cook's, or study Bradshaw and Henschel, or spend time in getting up German-English conversations. You merely order in a series of views of such places you wish to visit, and put them into your stereo-machine, in the same order as they occur on the map. You sit down in front of the stereoscope, pen and paper on one side, and the gazeteer on the other. Here is a picture of Mayence to begin with: the country rather flat on both sides of the broad river, a large town of closely-built houses, a bridge of boats, and another for the railway, and tremendous fortifications everywhere. Turn the handle, and Bieberich appears: the mountains are a little nearer, and vineyards are seen on the hill slopes; that big building by the Rhine must be the Duke of Nassau's palace, which the Prussian Court now lives in occasionally. (*Nota bene:* as a traveller has just been looked up for a month, for saying that the German Emperor had forcibly taken possession of the castle, we take warning, and use a mild expression.) Then we proceed, and behold the long broad Rudesheimer mountain, covered with vines, that are seen stretching down to the very edge of the water; and opposite is the picturesque town of Bingen. Farther on, and we come to the first castle of importance, the Rheinstein. This castle is no longer a ruin, but a trimly-built edifice, standing on a cluster of sharp rocks, that pierce the dense foliage, &c. Really nothing would be easier than to go on in this strain, and pen a guide-book with the photographer's aid; and as the author would be sitting comfortably in his library all the while, untried by the many vicissitudes of travel, the chances are, he would produce a far pleasanter volume than the actual traveller. At any rate, we have shown the way to set about writing a book of travels, in case any of our readers might wish to try the experiment.

*Tinted Paper in Portraiture.*—The employment of tinted albumenized paper, which was never in high favour in this country, is general in some parts of Germany. For little pictures of some kinds (as, for instance, carte-de-visite bust portraits of ladies) the rose tint that is most frequently used is not objectionable; but in our opinion it is very rare that a portrait is really improved by printing upon coloured paper. In looking over a collection of portraits of this kind, you may pick out a few now and then where, as in the case of very hard negatives, the result has been improved by tinting; but the high lights suffer considerable degradation. While, however, the use of rose-tinted paper may be permitted under some circumstances for portraiture, there can surely be no advantage in applying such paper to the production of photographic landscapes, which are to be seen in many little German towns surrounded by a pink atmosphere. One soon becomes exceedingly tired of looking at pictures of towns and villages, rivers and mountains, all portrayed in a glow of red. If a blue or neutral tint were employed, the softening down of the photograph would be just, as that would be very welcome to travelling photographers. If the weight of the plates could be sensibly diminished, either by substituting some other material for glass, or doing away with the same

altogether, it would be an important boon to the amateur and travelling photographer. It is now three or four years ago since the Austrian Photographic Society offered a gold medal for a flexible and transparent film that might be employed as a basis for collodion; but as yet nothing has been discovered or invented which can take the place of glass. Gelatine seems quite unsuitable for the purpose, for employed in any way, whether rendered insoluble by chrome alum or by any other substance, it invariably swells on absorption of moisture. Mica can be employed, but it is too expensive, and, moreover, large sheets of it, clear and free from faults, would be most difficult to obtain. The problem seems an insurmountable one, unless we can come back to Talbotype and paper negatives, which would be feasible enough if only a nice uniform material could be secured. If paper-makers would only interest themselves in the matter, and experiment for the purpose of securing a firm transparent material, we cannot help thinking that an eligible photographic basis, just as effective, and the result would not be so unpleasant. Collections of pictures, both carte and cabinet size, are to be seen all printed on this rose-coloured paper, and some photographers print all their portraits upon the paper, without giving one an option in the matter. The Victoria cards (an intermediate size between carte and cabinet, which some time ago bade fair to become popular in Germany) seem to have made little way, and are nowhere to be seen; but a *format* (or style) larger than cabinet is making its appearance. This photograph is oval in form, and about a size and a half of cabinet. The price of cartes-de-visite in provincial towns in Germany appears to vary from eight to nine shillings a dozen, while cabinets fetch the same money per half dozen.

*Transparent Paper for Dry Plates.*—We have now brought dry plates to such perfection that there is really very little improvement to be effected, either in the preparation or development of sensitive films. They are quite sensitive enough for most purposes, and, as the plates suffer no deterioration by keeping weeks or months before development, it matters little how long they are preserved before being taken home to the studio and finished. There is one improvement needed, however; glass should be altogether discarded. Paper makers, unfortunately, will have nothing to do with gun-cotton, or pyroxyline pulp, notwithstanding that the wet fibre is perfectly innocuous; otherwise it is not unlikely that a right suitable paper might be made by employing ordinary pulp and gun-cotton pulp in equal proportions. Wet gun-cotton pulp is so non-inflammable that, rather than burn, it might serve to extinguish a fire quite as efficiently as a wet blanket; but, unfortunately, its name alone suffices to keep it out of a paper factory. A transparent paper termed *papier vegetal* is used by Leon Vidal for films which are superposed and seen by reflected light. This substance might, perhaps, be employed for negatives if it has no susceptible grain or fibre.

### FRENCH CORRESPONDENCE.

A PORTABLE CAMERA FOR DRY PLATES—THE COAGULATION OF ALBUMEN—NITRATE OF POTASH IN THE SILVER BATH—D'AVANNE ON PRINTING AND TONING.

I HAVE lately had the pleasure of seeing a very ingenious apparatus, which is particularly adapted for use by amateurs and tourists. It is destined for employment with dry plates, and the whole amount of baggage may be included in a box of a few centimetres cubic measurement. The complete apparatus (to which the inventor, Dr. Ernest Tandaze, has given the name of "Scénographe") consists, firstly, of the camera and lens; secondly, the base; thirdly, the stand in the form of a walking stick; fourthly, the dark slide; and, lastly, the focussing screen.

The camera, as soon as ready for the operation, has quite the appearance of an old stereoscope, the sides of which are of black linen. It is composed of two frame-



works of acacia, or oak, or any other wood, covered with a bag of black or green silk, impenetrable to light. The smaller frame placed in front carries the lens, which is mounted upon a base, which may be moved to the right or left, according as a stereoscopic or album picture is to be produced.

This frame, which when shut up occupies only the space of the two frames, is pulled out, and becomes rigid as soon as you desire to operate, two movable slides of wood, above and below, stiffening it. A little plumb and line attached to the top slide demonstrates whether the apparatus is level or not. The second slide, which is under the camera, is furnished with a screw-plate, to which the stand is fixed. An arrangement allows of the taking of broad pictures or upright ones.

The camera is automatic—that is to say, its length is calculated so that the apparatus is in focus for objects situated at twenty-five metres, and beyond. When the object is at a lesser distance, then the lens must be focussed by the rack-and-pinion. The base, or support, is composed of two discs of wood screwed to one another and forming a sort of box in which there is a sphere, also of wood, furnished with a screw, which enters into the screw-plate above referred to, and the apparatus is by this means rendered mobile, or immobile, according as the screw is tightened or loosened. Below are three holes, in which the three legs of the stand are fixed. The legs are tubes fitting one in the other, the smallest being of copper and the other two of wood; when it is desired to use the stand, the cap of the stick is simply unscrewed, and the tubes fitted into the holes at the basis of the camera.

The dark slide is a frame of light wood, with a double slide of thin, hard cardboard; it holds two dry plates separated from one another by a sheet of opaque paper, and its dimensions are eighteen by thirteen centimetres, and its breadth twelve millimetres.

Such is a brief description of the *Scénographe*; and I may add that all the portions are so finished as to leave nothing to be desired in regard to securing perfect results. Finally, the price is so moderate that it may be purchased with the most moderate purse. It is certainly very superior to the Dubroni apparatus, which has been much employed by beginners, &c.

M. Quiquerez, whose name I have already mentioned in connection with the coagulation of albumen, has addressed me some further observations of an interesting nature upon the same subject. He persists in believing that a weak alcoholic bath has an action upon the albumen; he calls to mind, among other means of coagulation, that proposed some time ago by the Abbé Laborde, and which consisted in floating albumenized paper (the albumenized surface uppermost) upon a hot water bath of 100° Centigrade. He thinks that paper treated in this way would have the same defects as that coagulated by steam.

A twenty or twenty-five per cent. silver bath does not coagulate albumen entirely, for in a short time it begins to become yellow, and to emit a fetid odour, due to the albumen dissolved in it. Quiquerez employs a nitrate of potash bath, and, like many other operators whom we could cite, including M. le Comte de Courten, he is highly satisfied with it. It must not be forgotten that when the paper is treated, not only is chloride of silver formed by double decomposition, but a very sensitive product to light besides—albuminate of silver. M. Quiquerez thinks that nitrate of potash has the effect of facilitating the formation of chloride of silver, by rendering the film of albumen more permeable without at the same time dissolving it. By softening the surface of the paper it renders it more easily sensitized; it should be remembered that Dr. Van Monckhoven, in his treatise on photography, advocates keeping the paper in a moist place, so that the film may not become too much dried.

Not only, according to M. Quiquerez, has nitrate of potash a softening effect upon albumen, but it acts at the

same time as a preservative against putrefaction, and the bath wherein it is employed has no bad odour, even after long usage. It is always a good precaution to keep the bottle containing the bath in full sunlight, for, admitting that the albumen is perfectly coagulated, the bath is still liable to become contaminated with dust and dirt particles.

Any tint that may be desired can be secured on toning with the bath in question. M. Quiquerez does not think that ammonia fuming is indispensable, but the pictures print and tone more readily if ammonia be used. It is, besides, a process so simple that there is no reason for omitting it.

It is known that chloride of silver absorbs ammonia in large quantities, so that the fumed paper is in the same state as one prepared with a bath of ammonia-nitrate of silver; and it is well known that this compound has often been recommended by skilful experimenters who desire rapidity and softness.

M. Quiquerez forwarded in his letter some prints, the paper of which was sensitized upon a five per cent. nitrate of silver bath, containing as much as eight per cent. of nitrate of potash besides. The paper, which is highly albumenized, has lost nothing of its brilliancy. The photographs were not intensified in any way, and yet they are very vigorous.

In reference to this subject I may quote a passage from M. Davanne's text-book, adopted at the *Ecole des Ponts et Chaussées* at Paris. "The paper is prepared by floating for some instants upon a bath of albumen, to which chloride of sodium has been added in a quantity that varies from two to three per mille to two or three per cent. When in a dry state it is ready for use. The paper is sensitized upon a silver bath, the concentration of which varies from eight to fifteen per cent., according to the quantity of chloride in the albumen. If the bath be too strong for a slightly salted albumen paper, the liquid runs, or dries in streaks and drops of an oily character, and forms stains or patches. The most useful formula is:—

Crystallized nitrate of silver... 10 grammes  
Distilled water... .. 100 cub. cents.

A few drops of carbonate of soda solution to produce a permanent white precipitate.

"The sensitive film upon this paper is formed of complex products: chloride of silver, a sensitive compound of albumen and silver salts, a combination similar to starch, and free nitrate of silver. All these substances aid in the formation of the image. Alone, they give but inferior results; but together they furnish very fine impressions. The toning bath is made up of—

Water ... .. 1,000 cub. cents.  
Double chloride of gold and  
potassium ... .. 1 gramme  
French chalk, about ... .. 5 grammes.

This solution, which has a slightly yellow tint, should be bleached by the action of light, or by preservation for some time. It is well to prepare it and expose it to daylight for at least three hours before use. The object of bleaching is to transform the greater part of the perchloride of gold into protochloride; the perchloride reddens the print by depositing a quantity of gold, inferior to the quantity of chloride of silver formed, whilst with the protochloride the deposition is gradually by molecules. The period of immersion in the bath depends upon the tone that it is desired to obtain, and upon the concentration of the bath. A sojourn too prolonged makes the picture dull and flat.

ERNEST LACAN.

## THE PRACTICAL PRINTER IN AMERICA. VII.

### DURABLE SENSITIVE PAPER.

A CHAPTER devoted to the various modes of preparing durable sensitive paper is less practical than the bulk of Mr. Hearn's work, as it chiefly consists of a resumé of the



modes which have been proposed, without much of his own experience. Our readers are familiar with the modes of using citric and other acids, washing the paper after sensitizing, using carbonate of soda for preserving the sensitive paper, and we need not repeat them here. We append, however, his remarks on washing sensitive paper:—

*Washed Sensitive Paper.*—Paper sensitized in the usual way, and then washed, acquires keeping properties similar to that floated on a bath prepared especially for the purpose. The paper, when washed, should never be soaked in a bath of water, but only drawn through it *once*, and should not be permitted to remain in it more than one second longer than is really necessary, or it will surely make flat prints. The paper is floated upon the silver bath as you would do for ordinary sensitizing, and when drained sufficiently it is drawn through a lukewarm bath of pure water, permitted to drain again, and then hung up to dry.

“Long sensitizing on a strong bath is necessary for the success of the washed paper, and the water should be fresh every time you wash a sheet of paper. The used water can have the silver in it thrown down in the form of a chloride by sprinkling a little salt in it.

“An excellent bath for the paper that is destined to be washed is made as follows:—

Nitrate of silver	...	...	60 grains
Nitrate of ammonia	...	...	30 „
White sugar	...	...	3 „
Pure water	...	...	1 ounce.

Make *neutral* (i.e., neither acid nor alkaline) with bicarbonate of soda; float two minutes, let drain, and then pass the paper quickly through a citric acid bath of one grain of the acid to the ounce of pure water. Dry thoroughly, and pack away the paper in the dark without fuming, being careful not to expose it to the light.

“This paper will keep white for months if it is packed between blotting-paper, in a box which is made air-tight. To preserve the paper for a long time it is necessary, first, to prevent *white* light from ever striking the surface until it is to be printed; second, to always pack the paper in a dark room, and the packing should be so conducted that the paper in the boxes should be perfectly protected from the air; third, the packed boxes should be placed in a cool and dry place, and not in a place where the atmosphere is apt to be changeable.

“The paper should be fumed from twenty to twenty-five minutes, when about to print it, and chloride of lime should be in the fuming box at the time, to absorb the moisture of the ammonia, and to keep the paper white, for preserved sensitive paper turns quite yellow while being fumed.

“Paper is often—instead of being drawn through water—floated upon a bath containing alum in the proportion of four or five grains of alum to the ounce of water, or on a bath of water in which there is a little hydrochloric acid. There is some fault found with the acid on account of its being too insensitive. Objection is also raised to the simple citric acid; but in the latter case, instead of its being too insensitive, it is the reverse. In the case of the citric acid, if the number of grains of the acid to the ounce of water is not too large it will work well.

“Durable sensitive paper, whether washed or not, should always be fumed before use.

“*Toning.*—For good success at toning the citric acid (durable) paper, whether the acid is in the composition of the printing bath, or whether the paper is drawn through or floated upon a bath of diluted citric acid, the washing before toning should be comparatively very slight; and although the paper may be red, you should soak the prints in a very weak bath of acetic acid and water, a minim of the acid to the ounce of water, for five minutes, and then rinse well. For toning citric acid paper have the bath very alkaline, and if the prints should refuse to tone nicely, drop in about six to eight minims of a plain silver solution,

ten grains strong of the silver to the ounce of water. Stir well, and let stand for five or ten minutes.

“Warm the toning solution quite warm, and then allow it to cool to a lukewarm state before using. The ordinary toning bath can be used very successfully in toning the durable paper: indeed, there is no necessity for any other bath than those which will be given in a future chapter.

“The alum bath paper will tone more easily than the citric acid, and in toning this paper the toning bath need not be so alkaline.”

(To be continued.)

## ON THE PHOTOGRAPHIC TRANSPARENCY OF VARIOUS BODIES, AND ON THE PHOTOGRAPHIC EFFECTS OF METALLIC AND OTHER SPECTRA OBTAINED BY MEANS OF THE ELECTRIC SPARK.

BY W. A. MILLER, M.D., LL.D.\*

1.—At a meeting of the British Association held in Manchester in the autumn of 1861 I exhibited some photographs of spectra from the spark obtained between wires of different metals by means of an induction coil. Upon this occasion a hollow prism filled with bisulphide of carbon was employed, because, owing to its great dispersive power, it furnished spectra in which the lines under examination were more widely separated, and exhibited with greater distinctness than by any other medium in ordinary use.

The great prolongation of the more refrangible portion of the spectrum beyond the part visible to the unaided eye led me to believe that bisulphide of carbon was a material which exerted but little absorbent action upon the chemical rays. Subsequent experiments have, however, convinced me that this opinion was erroneous, and have rendered it necessary to modify considerably the conclusions deduced from those experiments.

2. At the time that that paper was written, I believed that the photographic effects produced by the electric spectra of all the metals furnished results in a great degree similar to each other, if not actually identical. This, it will be seen from subsequent statements, is correct so far as the fact of the similarity in this portion of the spectra is concerned, but is erroneous as regards the general conclusion deduced from it. During the past winter I have renewed these experiments, substituting a quartz train for glass and bisulphide of carbon, and have chiefly used a fine quartz prism, kindly lent to me by my friend Mr. Gassiot. The refracting angle of this prism is about 60°; its faces are about 2 inches long and 1½ inch broad, and are so cut as to furnish a singly refracted beam for the medium rays, by transmitting it along the axis of the crystal. It is well known, from the experiments of Prof. Stokes† and M. E. Becquerel, that quartz is remarkable for its transparency to both fluorescent and phosphorogenic rays of high refrangibility. It was soon evident that the absorbent action of the bisulphide was far greater than I had imagined, and that, in reality, the spectrum which it transmitted was composed of rays which did not extend beyond one-tenth or one-twelfth of the entire length of the spectrum obtained by the use of a quartz train.‡

\* We have had frequent occasion to refer to the late Professor Miller's valuable paper on the photographic transparency of various bodies, and have also often had enquiries in reference to the subject; and although we printed it in abstract at its original date, we think it worthy of preserving in our pages at length as published in the “Philosophical Transactions,” 1863.

† Phil. Trans., 1852, p. 540.

‡ The absorptive power of the bisulphide for the chemical rays was, however, noticed by M. E. Becquerel as far back as 1843, as I find by again referring to his paper (*Annales de Chimie*, sér. 3, vol. ix, p. 301). In this paper, M. Becquerel describes the absorbent action of various solids and liquids upon the chemical rays, but, from having used solar light, he failed to remark the great difference between the absorptive powers of quartz and glass. Although he used prisms of rock-salt, rock-crystal, and alum, his results do not indicate the real difference in their absorptive power; and, as in all his experiments on liquids he employed a vessel with tint-glass sides to hold them, his conclusions are vitiated by the same error which affected my own earlier inquiries on the subject.



3. The dispersive power of rock crystal is, however, comparatively low, and the difficulty of obtaining with it a spectrum free from the effects of double refraction through its entire length is great, so that it appeared to be worth while, as a preliminary inquiry, to ascertain whether any singly refracting medium could be procured better adapted to researches of this nature by sufficient permeability to the chemical rays, and by tolerably high dispersive power. Although no material on the whole preferable to quartz has been found, the investigation gave results of considerable interest.

4. Before proceeding to detail these results, it will, however, be convenient, as several distinct subjects will be discussed in this paper, to state the order in which I propose to arrange my remarks, and the heads to which they will be referred.

I shall commence with—

1. The absorption of chemical rays by transmission through different media.

a. By transmission through solids.

b. By transmission through liquids.

c. By transmission through gases and vapours.

2. The absorption of the chemical rays by reflection from polished surfaces.

3. The photographic effects of the electric spectra of different metals taken in air, including—

a. Pure metals.

b. Alloys.

4. Photographic effects of electric spectra of different metals produced by transmitting the sparks through gases other than atmospheric air.

5. The general results of my experiments upon the absorption of the chemical rays are the following:—

1. Colourless bodies which possess equal powers of transmitting the luminous rays vary greatly in permeability to the chemical rays.

2. Diacronic solids (that is to say, solids which are permeable to the chemical rays) preserve their diacronic power, both when liquefied, and when converted into vapour.

3. Colourless solids which are transparent to light, but which exert a considerable absorptive effect upon the chemical rays, preserve their absorptive power with greater or less intensity, both in the liquid and the gaseous state.

Whether the compound be dissolved in water or be liquefied by heat, these conclusions are equally true as regards liquids. Water is perfectly permeable to the chemical rays; and this circumstance, conjoined with the fact that in no instance does the process of solution seem to interfere with the special action of the substance dissolved upon the incident rays, render it practicable to submit to trial a great number of bodies which it would otherwise be impossible to subject to experiments of this nature, owing to the extreme difficulty of obtaining them in crystals of sufficient size and limpidity.

(To be continued.)

## ON THE OPACITY OF THE DEVELOPED PHOTOGRAPHIC IMAGE.

BY CAPTAIN ABNEY, R.E., F.R.A.S., F.C.S.\*

IN a series of pictures of the sun which have lately been taken by photography I found the opacity of the image by no means varied directly as the time of exposure. This caused me to institute an inquiry into the relation of time of exposure and intensity of light on the one hand, and the resulting opacity of the image on the other.

Primarily it was necessary to obtain some known gradation of intensity of light, and then to measure the resulting opacities caused by it on the photographic plate. The gradation was obtained by causing a "star" to revolve

rapidly round its centre. The "star" was cut out with great exactness from white cardboard, and made with eight "points." The curve of each point was made to take the form of a portion of an equiangular spiral. By this means an arithmetical progression of white was obtained when the star was made to rotate. When revolving in front of a black background, at two inches from the centre of the card (and within that distance), pure white was obtained; whilst at fourteen from the centre pure black was obtained. The black background employed was of such a dead nature that sunlight gave no appreciable shadow on it when an opaque body was placed before it.

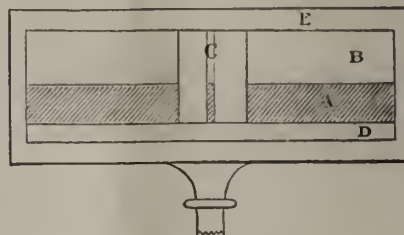
The star was made to revolve at the rate of fifty revolutions a second. In some cases a dead-black star was made to rotate before a clear sky, the only access of light being through the openings of the points.

Plates were exposed on this object, the negatives being obtained by the ordinary wet process, with simply iodized collodion, an eight per cent. nitrate of silver bath, and four per cent. iron developer. The strength of the developer was afterwards varied; but for the purposes of these experiments any variation was excluded. Other negatives were obtained on dry plates made with bromized collodion—a sixteen per cent. nitrate of silver bath, albumen preservative (washed off, after application, as far as possible), and alkaline development of one particular strength. By alkaline development, as is well known, the bromide of silver is reduced to metallic (or oxide of) silver *in situ*, no free nitrate of silver being applied to the image during development. The opacity of the image obtained by this method is particularly adapted for giving the necessary means of measuring the action of any relative intensities of light acting on the silver for any time.

In order to determine the opacities of the image, it was necessary to obtain some standard scale with which to measure. The ordinary method was tried without success, the image being "matt," or only translucent. Failure with them was inevitable. After various experiments with coloured gelatine wedges, I determined to use coloured glass wedges, and, owing to the kindness of Mr. Browning, obtained three smoke-coloured ones, corrected for refraction by crown glass. These, in varying combinations, have given me everything that could be desired. The mounting I adopted for them is as follows.

A is the wedge in position; B a space in the frame E, in which any glass whose opacity is to be measured is placed; C a slit; and D a fixed scale dividing the wedge into arbitrary divisions. In actual use the whole of the frame was glazed with finely ground glass, the slit being next to it, and the wedge against that again. When measurements of opacity were taken, the glass to be tested was placed in B, and a light placed at a known distance behind the slit. Great care was taken to ensure the equal illumination of C. The length of the wedges are severally 6.5 inches.

Fig. 1.



They do not give a zero of absorption at their thin ends, it being found necessary in grinding to have an appreciable thickness. I was enabled to calculate the relative absorptive values of each wedge, and the following table will give an idea of the degree of accuracy with which they were scaled. The values are given in lengths of a half-inch scale, starting from the calculated zero of the wedge which

\* *Philosophical Magazine.*



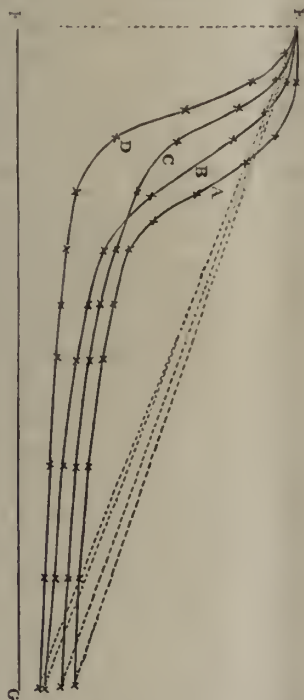
I have called A. Each of the wedges was reduced to the same scale. The numbers refer to different opacities which were measured. A mean of six readings was taken in each case, and in no instance did any reading vary more than .15 from the mean.

	A.	B.	C.
No. I. ...	7.15	7.13	7.13
No. II. ...	10.21	10.20	10.18
No. III. ...	12.44	12.45	12.41
No. IV. ...	17.60	17.50	17.52
No. V. ...	18.60	18.52	18.52

From careful measurements, it was found that the coefficient of absorption for each unit of scale of wedge A, for the light with which the measurements were taken, was .192.

The photographs of the rotating star were taken of the full size of the original, only half of the disk being, in some cases, on one plate. Strips were cut from these negatives, one edge always passing through the centre of the image of the star. The relative transparencies of every  $\frac{1}{4}''$  or  $\frac{1}{8}''$  were obtained by comparison with the wedges. From these values the accompanying curves (fig. 2) have been formed, the ordinate being the translucency, whilst the abscissa is a measure of the intensity

Fig. 2.



A and B are the curves given by the images on the dry plates.

C and D are the curves given by the images on wet plates.

The dotted lines indicate the line whose ordinates give an arithmetic progression of transparency, E F being unity, or transparency.

F G represents the length of the strips examined, and therefore the varying intensity of light, F being zero, and G the maximum.

of the original reflected light. Only four results are shown—two obtained by wet, and two by dry, plates. About thirty were measured with almost identical results.

Each strip was compared with the wedge by daylight, and also by an artificial monochromatic light. The results obtained by the one were nearly proportional to those obtained by the other; hence, only one curve for each strip is given, and this was obtained by the latter light. To guard against a false ratio of intensity of light due to the lens, negatives of the star were taken at different parts of the plate, and a mean taken. As the

lens used was non-distorting, and of long focus, the edge and centre of the plate, when directed towards the sky, or on a uniformly white surface, had sensibly the same illumination. Each portion of the strip cut from the negative whose opacity was to be compared was placed above the wedge, at B, and opposite the slit C. These were clamped together, and moved till light from behind, shining through the slit, and through the image and the wedge respectively, appeared of the same brightness on the ground glass. The position of the slit in regard to the scale was noted, and the intensity of light transmitted calculated by the ordinary formula. Each strip was compared six times—three times by myself, and three times by an assistant. A mean of the six readings was taken as correct.

Regarding the curves given by the dry plates, if we suppose that varying intensities of light cause a corresponding reduction of the bromide of silver after development, it can be easily demonstrated that the intensity of light passing through the image, after clearing away the unaltered bromide, would be

$$I' = n \cdot e^{-kI} \quad (a)$$

where  $n$  and  $k$  are constants depending on the thickness and opacity of the bromide film, and  $I$  the intensity of the light producing any one part of the image—that is, on the supposition that the image is formed of matter continuous, but of varying density. This is not the case; but there is an approximation to it. Under the same supposition we can assume that there is a function of time into a function of intensity of light acting on an infinitely thin layer of the bromide of silver which will cause an entire reduction of the bromide on development; this we might call a state of saturation. In the image of the star there may be some point where the upper layer of bromide (of infinite thinness) is saturated. From that point, along the image to be produced by the higher intensities, the whole surface is saturated, and the saturation must gradually approach the bottom surface. From the point where the whole depth of the layer is saturated, along the image to be produced by still higher intensities, there can be no further change. Here it can be demonstrated that, between the two points above alluded to, the curve should have the form

$$I' = pI^{-q}e^{-rI} \quad (b)$$

where  $p$ ,  $q$ ,  $r$  are constants, and  $I$  is the original variable intensity producing the image. From the last point parallelism would result, and  $y$  would become a constant. Theoretically, then, the measure of the varying translucency would be compounded of (a), (b), and a straight line.

The curves shown above lead us to suspect that this is the practical result of increase of intensity and time. From other experiments, however, I am inclined to think that, even where there is no saturation, the relation between time and intensity is not so simple as has hitherto been imagined. When light actually reduces bromide without the aid of a developer, a compound curve, somewhat similar to (a) and (b), will result. In collodion-chloride printing on glass a like result would occur. Presumably the same also occurs when printing on albumenized paper. The curves deduced by experiment, and also from calculation, show the reason why, in a negative, the detail in the shadows and highest lights is more difficult to render faithfully than in the half-tones. They may also show why, in a print, the details in the first-named portions are liable to be obliterated, even should they be well defined in the negative.

The curves measured from the dry plates show that bromide of silver is less sensitive to low intensities of light than is the iodide.

The action of different strengths of developers I propose to treat of in a separate communication; as also the relation between time of exposure and intensity of light.



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## LANDSCAPE PHOTOGRAPHY FOR PORTRAITISTS.

THERE is a very large section of the photographic community, consisting of the majority of professional portraitists, who have probably rarely or never produced a landscape, and who, not for lack of photographic skill or knowledge, but simply from absence of experience and lack of suitable appliance, would find the task a troublesome one if they were called upon, for business or pleasure, to make the attempt. One or two brief hints as to the modifications in apparatus, materials, or operations, which may be easily made conducive to success, may be of interest and service to such of our readers as belong to the section of the community we have indicated.

The conditions of portraiture and landscape work are in many respects essentially different, and the photographer solely familiar with one branch rarely succeeds at once with the other. Our aim here is not to enter into a consideration of the best apparatus and the best preparations for securing the highest success in landscape work, but simply to suggest to the modestly equipped portraitist in what manner he may best set about producing a landscape should choice or necessity place the task before him.

As regards apparatus. In many portrait establishments there are, of course, only portrait lenses; and these, although not the best for landscape work, may be made to answer very well. The ordinary portrait lens with a small stop will give very good results. The size of the stop must be determined by an examination of the image on the ground glass; but as a rule it will require to be much smaller than is usually necessary in studio work; but at the same time we should recommend working with a stop as large as possible consistent with definition. In focussing, the studio experience of the operator will not take him far enough. There are two points to which attention must be given on the ground glass: first, that sufficient definition is secured at the margin of the picture, as well as in the centre; and second, that the various planes of the picture, foreground and distance, are sufficiently defined. It is better to focus on some principal object in the foreground, and the size of the stop must then be reduced until the various planes beyond are sufficiently sharp. In using the term *sufficiently* sharp, we assume that the operator is familiar with all the term involves. It is not necessary nor desirable that the middle distance and extreme distance should be as sharply defined as foreground objects, nor is it in many subjects as important that the margin of a picture should be as sharp as the middle portions, in which the focus of interest as well as definition should be found. One special fault of the

portrait lens is, that it is more difficult to spread definition and illumination with it than it is with a single landscape lens. With a portrait lens there is a concentration of illumination and definition towards the centre; with a landscape lens the illumination and the definition are less intense and more evenly diffused. The front lens of many portrait combinations makes a capital landscape lens, and in some cases it is so arranged that, on unscrewing and removing the back lens of the portrait combination and placing the front lens in its place, with the inside surface turned to the view, it is suitably fitted for use as a landscape lens. The focal length of the front lens of a quarter-plate portrait combination is often about twelve inches, and answers well for whole-plate views. In using a single view lens there are a few points to be remembered which are not always familiar to the portraitist. A stop of much smaller aperture should be used than is almost ever used in the studio. The aperture should rarely be larger than one-twelfth of the focus of the lens. Thus, in using a lens of twelve inches focus, the aperture should not exceed an inch, and in many cases, to secure good results, it may with greater advantage be about half an inch. The stop should, as a rule, be placed about one-fifth of the focus in advance of the lens. The nearer the stop is placed to the lens, the larger will be the field of illumination, and the less the amount of barrel-shaped distortion always present when a single lens is used; but the marginal definition will be rendered less perfect, and the curvatures of field will be increased. Thus, if it be necessary to use a single lens for interiors, the stop may with advantage be placed near to the lens, as a curved field is in such a case an advantage, and absence of barrel-shaped distortion another advantage. But where a flat field is of importance, the end will be gained by removing the stop as far from the lens as convenience will permit.

A landscape camera of some kind will, of course, be desirable, for convenience, and a portable camera stand; but in their absence, for an occasional essay, the portraitist must make shift with the most portable appliances in this way which he can command.

It is probably in the use of materials, formulæ, and manipulations generally, that the photographer solely used to studio work will find himself most at a loss. At the outset he should remember that as a rule more density and more brilliancy are required to give fine landscape prints than those in the present day commonly produced in portraiture, which, for the best results, are usually thin and delicate. It is desirable that the collodion should have more body; and whilst the same silver bath may be used, the developer should be weaker and more acid. We may here quote some good remarks on the subject by Mr. Gihon, a skilful photographer in Montevideo, writing to our Philadelphia contemporary. He says:—

"The thin delicate negatives that every advanced operator prides himself upon producing in atelier work are most unsuitable for landscape purposes, and he who takes the field provided with the materials that he has used for portraiture will soon find that modifications are necessary. Collodion, bath, and developer, each and all, have to be altered. With collodion, I have always maintained that excessive nicety in choice and proportions of sensitizing salts is not of the first importance. The quantity and character of the cotton that is added to the ether and alcohol, and the relative proportions of each of the latter, have always presented themselves to me as matters worthy of more attention. I advance it as a rule that nicer distinctions in the printing capacities of a negative can be made by judicious selections of gun-cotton than by the same amount of experiment with different iodides and bromides."

He recommends using about double the quantity of cotton for landscape work that is used for portraiture; and to use a bath forty-five grains strong. In reference to developer he refers to a formula published by us some



years ago, and says:—"Late constant use leads me to recommend it in the strongest terms.

Protosulphate of iron	...	...	3 ounces
Sulphate of copper	...	...	1 ounce
Water	...	...	80 ounces
Glacial acetic acid	...	...	3 "
Alcohol	...	...	3 "
Ammonia...	...	...	100 drops

This developer improves with some little age, and can be used with the utmost safety in relation to any fogging propensities. Its action upon a well-timed plate is all that can possibly be desired."

A more simple developer, which we found capital for landscape work, is as follows:—

Protosulphate of iron	...	...	20 grains
Acetic acid	...	...	40 minims
Liquid ammonia	...	...	1 minim
Water	...	...	2 ounces

This develops somewhat slowly, but gives delicacy, brilliancy, and force. As we have already occupied sufficient space, we must refer again to the subject in our next.

### AMERICAN CORRESPONDENCE.

#### ALUM FOR ELIMINATING HYPO—MR. HEARN'S FORMULA—A GOOD IDEA.

*Alum.*—Nothing is more curious than to get in a assemblage of men and women and quietly watch their actions—in a convention, for example. Some most curious things occur. Matters of no real importance at all will be brought up and discussed at great length, and a consequent loss of time, each one insisting upon saying his say, while matters of vital importance are scarcely noticed. Such a study is our National Photo. Convention. What follows will give you an illustration. Mr. William H. Sherman, of Milwaukee, Wisc., is one of our most diligent and enlightened experimentalists, and at our Buffalo Convention gave us the vermilion toning bath. He is always a lively correspondent. The following I glean from one of his recent letters on the subject of *alum*. He says:—

"It was announced before the National Photographic Association at Chicago, by Mr. Clemons, that he had discovered a simple process by which the hyposulphite may be eliminated from silver prints, after fixing, in the short time of eight minutes. All that is required to insure this most important result is to immerse the prints, directly from the fixing bath, in a saturated solution of alum, whence, after removal and rinsing in a few changes of water, the work is accomplished, which otherwise requires much labour and many hours' time, and is even then but imperfectly performed.

"I am unable to say which was most to be wondered at, on that memorable occasion, the comparative lack of enthusiasm with which the announcement was received, or the quiet and unobtrusive manner in which the discovery was made known. But more wonderful and surprising than either are the simplicity and completeness of the process. Here is the problem which has baffled the enquiry of investigators ever since it became known that silver prints would fade, until not only is the possibility of their permanence well nigh despaired of, but the public are beginning to intimate, in a manner not to be misunderstood, that something must be done to remedy the difficulty. The need of some safe and sure method of removing the hyposulphite from the prints is pressing. Practically to accomplish this by washing is impossible. If the prints are washed rapidly, some of the hypo remains, and its presence may be detected by a suitable test. If they are washed a long time, they at length turn yellow in the water, probably by decomposition of hyposulphite and liberation of sulphur. It remains, then, to choose one or the other horn of the dilemma. One is to remove the prints from the water in a short time, with their brilliancy unimpaired, but with hypo in them; the other is to wash them until, if there is no hypo in them, they are more or less yellow with sulphur from decomposed hypo. Of the two the former is, unquestionably, the better choice. In either case they will fade.

"Is it possible that photographers are so indifferent to the future fate of their productions as to fail to appreciate the discovery that

enables them, in so simple and easy a manner, to remove the cause of the mischief, which, if not remedied, will sooner or later seal the doom of silver prints? The hypo all removed and the washing completed "in eight minutes!" It can be done. There is no mistake about it. There is no longer even the shadow of an excuse for photographers palming off pictures with hypo in them. But little water is needed for the prints after they have been in the alum. One or two pails full will answer if it happen to be scarce.

"As to the alum solution, it may be used over and again. Mr. Clemons did not tell us this, but it is so, nevertheless. Take a strong barrel with wooden hoops (say a whisky barrel), and into it put a bushel of alum. Fill the barrel with water, and stir with a broom-handle until no more will dissolve. This will last your lifetime. After fixing, put your prints from the hypo right into the barrel; or, if more convenient, drain off the hypo, and then dip out enough of the alum-water in a wooden bucket, and pour over the prints. After stirring and soaking the prints the alum may be poured back, and stirred up with the rest. It may then be left to settle.

"It will be observed, after immersing the prints in the solution of alum, that the liquid will assume a milky appearance, and the sense of smell will easily detect the odor of burning sulphur. The former is sulphur from the decomposed hypo, and the latter is sulphurous acid from the same source. After the prints are removed from the alum water and rinsed, dry them thoroughly, and burn them.

"The alum 'eliminates' the hypo, by converting it into sulphate of soda, sulphur, sulphurous acid, and water. This completely disposes of the hyposulphite. The sulphur being insoluble, the portion in the prints when liberated by the alum remains in the prints. This is the chief objection to Mr. Clemons' process. The sulphur must be 'eliminated,' or the prints will fade. This may be said to be an established fact. Sulphur, in a state of minute division, especially when associated with organic matter, oxidizes in the air. This, it is known, will cause paper to become rotten, and this is believed to be the cause of the fading of silver prints when a trace of hypo is left in them. Whatever method is employed to remove the hypo from the prints, it is essential that the process by which the elimination is effected do not introduce some substance or substances equally or more injurious in the place of that which is eliminated."

*Mr. Hearn's Formula.*—I am glad to notice the value you set upon Mr. Hearn's new book, "The Practical Printer." It is just as good as you say it is, and upon a subject which photographers need to study diligently. Still, you have given your readers so liberally of the contents of the new book, that I need not dilate upon its excellences here. Mr. Hearn has supplied me for publication here (and I send you an early copy of it) his "formulae in a nutshell." Of course, it will not be understood that this is all he teaches in his capital work. It is only the skeleton, and the book fills in all the interstices, with most careful attention to details, so that the result is full, and round, and rich with valuable information. But here is the "Nutshell."

#### "SILVER BATH.

"I place a sufficient quantity of the N. P. A. extra brilliant Dresden pink paper, for the next day's use, over-night in a close box, on the bottom of which I place a tray of fresh water. This dampens the surface of the paper, and makes it take very readily to the solution when floated.

"Make up a solution as follows:—

Nitrate of silver	...	...	...	45 grains
Nitrate of ammonia	...	...	...	45 "
Alum	...	...	...	1 grain
Distilled water	...	...	...	1 ounce

"Make the bath quite acid with nitric acid, C. P., and then perfectly neutral by the addition of liq. ammonia. Place a lump of camphor in the solution, and it will always prevent blistering. Float the paper sixty seconds, and draw it over a smooth glass rod. Dry quickly, and fume ten minutes. Print about two shades dark.

#### "ACIDIFYING SOLUTION.

Lukewarm water	...	...	...	1 gallon
Acetic acid, No. 8	...	...	...	$\frac{1}{2}$ ounce

"Acidize fifteen minutes; keep moving all the prints constantly. Pour off this water and save it, also the next rinsing water. Wash



in another fresh bath of water five minutes, and they are ready for toning.

#### "TONING BATH."

Acetate of soda ... ..	15 grains
Chloride of soda ... ..	10 "
Chloride of gold ... ..	1 grain
Filtered rain-water ... ..	15 ounces

"This bath ought to be a week old for stock, and every day, about two hours before toning, make up in the same proportion as above a fresh lot of sixteen ounces, and mix the two together. The prints will tone in about ten minutes, which is plenty quick enough for me. Tone a little purple. Place the prints, as soon as toned, in a bath made as follows:—

Sat. sol. alum ... ..	16 ounces
Water ... ..	1 gallon

"Remove the prints, when ready for fixing, from this bath into a hypo bath made as given below:—

Hypsulphite of soda, sat. sol. ... ..	1 ounce
Water ... ..	12 ounces
Bicarbonate of soda, sat. sol. ... ..	1 ounce
Chloride of soda ... ..	$\frac{1}{2}$ "

"Fix fifteen minutes, weaken one-half, and fix five minutes longer, and then weaken to about as near as you can calculate the density of the salt solution, which is made as follows:—

Chloride of soda ... ..	1 ounce
Water ... ..	1 gallon

"Let the prints remain in here about ten minutes, and then weaken this to about one-half of its former density, and let them remain five minutes longer; and now finally let this salt-water bath be weakened to the density of fresh water, and then remove them to the washing-tank, and wash them well before you leave them for the night, as this is very important. Three or four hours' washing is sufficient, when the plates are soaked in a salt-water bath after fixing.

"Rinse the next morning in pure filtered rain-water, so as to remove all iron-rust from the prints, and mount damp."

*A Good Idea.*—That is a good idea of yours, to suggest to your society the offering of a medal to American photographers. I am sure it will bring more responses than our offer to England does.—Truly yours,

Philadelphia, August 26th.

EDWARD L. WILSON.

#### GERMAN CORRESPONDENCE.

THE CHICAGO ACCIDENT—ACTION OF DRY AND DAMP ATMOSPHERES ON PHOTOGRAPHY—ACTION OF HYPOSULPHITE IN THE DEVELOPER—IMPURITIES IN THE DEVELOPER—SULPHUROUS ACID AS A SUBSTITUTE FOR HYPO—INTENSIFYING WITH PERMANGANATE OF POTASSIUM—THE FALL OF PORTRAIT PHOTOGRAPHERS.

BY DR. H. VOGEL.\*

NOT without anxiety do we look forward to further news from America. The telegraph has notified us that during the Exhibition a great conflagration has devastated the city. We always follow with much interest the proceedings of the American Photographic Association, and should regret it very much if its deliberations had been disturbed by this accident; still more do we mourn that the ill-fated city has for the second time been visited by such a calamity.

We have had lately such an extraordinarily dry atmosphere, something unusual in the otherwise eternally wet atmosphere of Europe. For weeks we have had hardly a trace of rain, and this produces phenomena which affect photography injuriously, particularly with long exposure of plates and on the printing paper. Curiously enough, the Lichtdruck is also affected by it; the gelatine plate from which the print is made requires always a certain degree of moisture, and the prints which are made in the damp atmosphere of autumn are much handsomer than those made now. But aside from these matters, a dry

atmosphere generally is advantageous to photography. In the always damp and hot atmosphere of Aden I have met with numberless obstacles; the plates could only be cleaned with difficulty; after a few hours they attracted moisture from the atmosphere, which required an extra polishing. I could expose them for twenty minutes, thanks to the damp atmosphere, but it took an enormously long time before a plate became sufficiently dry for varnishing, and the varnish attracted moisture from the atmosphere and became cloudy. The varnish film so obtained had very little stability; after a few months it cracked, and the plates which I took at that time are now, all of them, destroyed. To take dry plates in such an atmosphere is almost impossible, simply because the dry plates would not dry. A preliminary coating with albumen was also out of place, as in a very short time small fungi would show themselves, which produced spots. Under these circumstances I prefer to work in a dry atmosphere, although here, too, we meet with plenty of difficulties.

Mr. Schaarwachter reported lately a rather curious annoyance in intensifying: the plate became suddenly dark, the shadows showed a blue-black fog, the whole picture changed and became a positive. This is generally ascribed to deficient pyrogallie acid, or a want of acidity in the developer. Neither of these causes operated here, for the intensifier did not change its action after fresh pyrogallie acid and glacial acetic acid had been added. Finally, Mr. Schaarwachter had to abandon the ordinary method of intensifying, and strengthened the plates after they had been fixed and washed. Pyrogallie acid and silver did not act injuriously. Only after a long search the cause of the above mishap was discovered: a small quantity of hypo solution had found its way into the developer. In fact, any one can produce this action by adding a small quantity of hypo to the developer. Similar results are brought about if we add sulphurous (SO<sub>2</sub>) acid to the developer. Formerly, sulphate of iron was frequently contaminated with this substance, and the consequence was that the picture became foggy over its whole surface. I remember an instance which happened ten years ago, when a photographer in Java received a supply of such sulphate from here, and who, in consequence, had to lie idle for six months, until he could receive a fresh supply. Similar faults have afterwards been unjustly ascribed to the iron, while, in fact, the acetic acid was to blame. I received from Hamburg a sample of acetic acid which, when employed as a developer, produced fog. This acetic acid was made from pyroligneous spirit. Since that time I do not use any acetic acid in the developer, but take simply two or three per cent. of alcohol, and about one cubic centimetre of sulphuric acid, to one litre of developer. The percentage of alcohol has, of course, to be increased when the bath contains much alcohol, and *vice versa*.

Although I have mentioned that sulphurous acid acts injuriously in the developer, I must not omit to mention that this body is, in other respects, of great advantage to the photographer. Until recently, the rags which are used for making paper and cardboard have been bleached with chlorine, and the last traces were removed with hypo; a small quantity of hypo remained, however, in the paper, which was apt to turn the picture yellow. The sulphite of soda is free from these disadvantages; it absorbs, likewise, the chlorine, and is, in this respect, a perfect substitute for hypo. The sulphite of soda was formerly very expensive; but the price has now been reduced so much that paper makers can use it, and we will hope that we will get rid of an unpleasant trouble with our mounts. Attempts have also been made here to bleach the mounts with permanganate of potash: this does very well; the color is destroyed, but the paper itself is coloured brown by precipitated oxide of manganese; the brown colour is removed by sulphurous acid, when the mass becomes brilliantly white.

\* Philadelphia Photographer.



I have lately tried again to use permanganate for intensifying. When we coat a fixed and washed negative plate with permanganate of potash, the plate becomes of a yellow-brown colour; this colour is very opaque for chemical rays, and this recommends it for intensifying the negatives of drawings, &c. A diluted solution of permanganate, one to two hundred, is employed at first; afterwards we take a concentrated one, of the strength one to one hundred. The permanganate is decidedly preferable to chloride of mercury, iodide, and sulphide of potassium, for the latter has a very unpleasant smell. Iodine and bichloride of mercury give pictures of uncertain keeping qualities, and sometimes the intensification is lost—i. e., instead of the dark compounds, light chloride and iodide of silver are formed. Permanganate has none of these drawbacks.

A few days ago I read in the *Photographischen Notizen* a letter of a portrait photographer, which I consider worthy of recital.

"We portrait photographers are miserable beings, said an old colleague to me, while talking about the joys and sorrows of our business. The joys are few; I believe the only one is the pleasure of earning money. I feel like laughing when I read a description of the pleasure of having made a satisfactory picture—a picture which is the delight of the whole family, and the photographer is overwhelmed with applause. I am not vain; the least am I vain of my pictures. How often does it happen that I devote all my care, my attention, my knowledge and understanding of art to the production of a perfect picture. An elegant young damsel is posed, lighted *à la Rembrandt*, and my first operator and myself do not rest until a perfect negative has been obtained. We are both delighted, we are proud of our work, the print turns out magnificent; but what is the result? The beauty throws the picture at my feet. She had been the night before to a ball, was tired, and poor me did not know that. I could not tell whether that was her ordinary expression, or whether her beauty was still more radiant when she had not been to a ball the previous night. This has happened to me often. Sometimes I can find out the reasons why my pictures do not please; at others, not. Then it turns out that he or she had a toothache, or quarrelled with his better half, or lost a lawsuit. Again, others had to wait too long, and became angry. And in the face of such discord, the noble art of photography creates pictures, but not expressions.

"On the other hand, I know instances where the pictures were absolute failures. There was an unruly model, which could not be posed or could not sit steady; or the light was bad; or the devil played havoc with the bath or the chemicals; in short, the pictures were shameful. When I showed these abortions to my customers, and wanted them to sit a second time, what was the result? The customer was delighted, declared the picture the finest that was ever made, considered my objection unfounded, and it is horrible to relate, but true, such customers have recommended me all around. I should blush if I saw those pictures hanging on the walls, provided that I was still capable of blushing, but I have become indifferent to such things. Praise and blame run off from me like the rain from a duck. Every photographer has to be prepared to hear that the finest picture is found horrible, and he must not think that the public is malicious. The portrait painter is better off than we; he really becomes acquainted with his model, for he occupies himself with his sitter longer than a quarter of an hour. Unfortunately we have not the time for that, and this cannot be helped.

"A friend and colleague of mine once photographed my wife and little boy. It was a splendid picture, but the boy had his tedious hour, and looked in the picture so stupid and sleepy, while in reality he is just the reverse. If I should have paid for the picture, I would have rejected it, in spite of all its brilliancy, sharpness, light effects, &c. 'This happens to us often—we poor portrait photographers.'

## HOW TO AVOID UNNECESSARY WASTE OF TIME AND SILVER.

BY E. Z. WEBSTER.\*

DOUBTLESS the following will strike some of my brother photographers as an unnecessary waste of words; but the result of twenty-seven years' experience in the business has satisfied me that not one photographer in fifty makes a systematic and economical use of his silver and gold; and time, which is money. A properly graduated scale would place time high above all other treasures, and still it is more lavishly wasted. No ambitious photographer can afford to waste his time, and certainly no real devotee of our beautiful art ever need waste a moment. Every hour of daylight is pure gold, and should be devoted to those purposes which can only be successfully prosecuted by day, leaving until night those things which can just as well be attended to at that time. Of course I am addressing the ambitious, and the devotee. If you are an old veteran our advice is unnecessary, but those who have a name to make will please take heed.

Many things can be done by lamplight which will economize your daylight. If you are master of every branch of your business you will find enough to do; and if not master, you will find enough to do as pupil. Study, study, study; read everything pertaining to your business; think it all over; cull out a word here, an idea there, and put into practice every useful hint and available suggestion. Notwithstanding my many years of experience, I find so much which is new to me, and so much that is useful, that I can but wonder how any photographer can possibly succeed who neglects his printed opportunities. Of course, there is great diversity of opinion in regard to the various processes: one writer advocates one plan or formula, and another writer condemns that, and recommends another which is diametrically opposed; and still each seems to produce successful results in the hands of those who can work it; but no one can succeed who tries to follow all the paths. He must take some one which he has confidence in, and follow it up and make that his general plan, and then work, study, think, and press into service every available hint, suggestion, and idea which can be obtained.

The waste of time and opportunities is more important than all other waste put together, and any one who does not economize in all things, does not economize at all. And here let me explain by saying that true economy sometimes seems an absolute waste; but the final result must always be considered, and if the object gained is worth all the labour, time, and treasure which has been expended, well and good; but if the same object might have been attained at a less cost of time and treasure by a more judicious expenditure of either, then there was a lack of economy. Many photographers are deluded with the idea that a "silver-saving apparatus" would insure their everlasting salvation pecuniarily, and because they are told that nearly all the silver used in their business can be recovered, the utmost carelessness is practised, consequently from fifteen to thirty per cent. more silver is wasted than is necessary, and the unnecessary waste is greater than the clear saving of any "silver-saving process" in use. Of course, no one can deny the propriety of saving all the silver which can be saved economically, but it requires more judgment to determine when, where, and how to save silver, than it does to run a steamboat, because the relative value of time and silver is constantly and sometimes momentarily transposed, and when a man gets silver saving on the brain, he will follow up and corner the last drop, and ferret out and bag the smallest scrape, even though he may have a sitter in the chair and a dozen more waiting.

Suppose you could save seventy-five per cent. of the silver used, if you will count the cost of time and trouble expended in saving so high a percentage, and then deduct the unnecessary waste which you made thinking it could

\* Philadelphia Photographer.



"most all be recovered," then deduct that twenty-five per cent. for refining, allowing the refiner to do the figuring, and when you get through you will find the silver you have saved has cost you about one hundred dollars per pound.

Further, I claim that the term "waste or spent solutions" is a misnomer, and does not apply to any solution containing any substance which we wish to retain or reconvert to the same or any other purpose. When the silver has been precipitated from hypo, cyanide, or any other solution, the remaining solution may be "waste or spent," provided we have no other use for it.

The same remark holds good in regard to the chlorides, sulphurets, &c. When the silver has been extracted therefrom the residues or refuse constitute waste, and nothing else.

Finally, I claim that the most economical way to save silver is not to waste it unnecessarily, and in our next paper I shall point out some of the holes through which silver escapes, and will endeavour to suggest a partial remedy.

(To be continued.)

## Notes and Queries.

### FUMING SENSITIVE PAPER.

SIR,—It has been more than once suggested that the subject of fuming sensitized paper should be discussed in your new column of "Notes and Queries," but no one has volunteered to open the question. The American writer on Practical Printing takes the practice of fuming for granted, and only seems to think it necessary to discuss the best manner. Will any of your readers who may have had experience in fuming be good enough to enlighten the fraternity as to its advantages or disadvantages? Is not the fuming of the pad to be placed at the back of the paper as good as fuming the sheets?

THETA.

SIR,—The suggestion made by "Senex" on the 14th ult., as regards fuming, is a very good one; as I think it would be of great service to some photographers in England to understand a little more about fuming. And what better plan is there of finding advantages and disadvantages of fuming than by a few good practical men taking up the subject, and giving their experience, whether it be successful or unsuccessful, fully describing the chemical action caused by fuming, and the adding of salt or acetic acid to one of the washing waters, so as to redden the prints previous to toning, and whether it is best to have the toning bath slightly acid, neutral, or alkaline? If the subject is taken up, I will give you my experience with the fuming box in America. Enclosed, I send a few photographs taken in the vicinity of Boston, which I hope our dear Editor will criticise, as the paper was fumed from fifteen to thirty-six minutes. I may mention, for those who want to experiment on fuming, that they should get a box that will not let the fumes escape, pin a sheet or two inside, then get a sancer and put about an ounce of the strongest liq. ammonia, turn the box bottom-side up, with the ammonia underneath, and let her go for from ten to twenty-five minutes, according to the brand of paper they are using, &c. Do not be afraid to fume long enough, and see that your paper is thoroughly dry before putting it in, or else it is certain failure. Hoping to hear more anon on fuming, I remain, yours respectfully,

AMERICAN.

### DRYING SENSITIVE PAPER.

SIR,—The "Practical Printer in America" refers to the necessity of drying the paper after sensitizing. Is this necessary, and which is the best mode of going about it? I have always been in the habit of allowing mine to dry spontaneously. Will any experienced printer say if any important advantage is gained by drying by artificial heat?

AN APPRENTICE.

### MOUNTING WITHOUT COCKLING.

DEAR SIR,—Can you tell me of any plan by which I can mount large prints on thin cardboard without its cockling? Some time since I had to mount some 10 by 8 on paper to be bound in a book, but could not get them flat. I tried straining the paper on a drawing board; when dry, mounted the pictures; then let

remain till thoroughly dry, when it looked very well till I let the edges loose, when it at once began to curl. The only way I could get anything respectable to please me was by printing on a large piece of thick salted paper, covering the negative, &c., with a piece of black paper cut out to form margin. Now, is there no known way to mount a print as flat, or how do they make thin cardboard so flat? I have tried damping the cardboard, but it was not successful, and nearly spoilt the cardboard.

I use starch for mounting. I find, of course, the quicker I can get the pictures to the card the better after it is damp, but they will not lay flat if not thoroughly pasted.

Now, an answer to this query would, I think, be extremely useful for I find, by pictures I see, that others are in the same state as myself. And I think we ought to be able to mount (say) a photograph on albumenized paper 17 by 12 on eight-sheet cardboard, and get it as flat as the cardboard was before, for a thicker card seems so clumsy and unnecessary in a portfolio, though it would not matter how thick it was in a frame.—I remain, yours respectfully,

R. HOULSON.

If you consider any material more suitable than starch, would you be so kind as to explain?

### PHOTO-MECHANICAL PRINTING.

SIR,—From time to time you are so good as to inform your readers of the progress of photo-mechanical processes on the Continent, and to encourage its development in this country through your widely-spread journal. Captain Waterhouse has given us occasionally details of his mode of working, and I shall be greatly obliged to any of your readers who have tried his method with success for any hints on the subject: specifying the kind of gelatine used and where to obtain it, the mode of drying, and any hints upon substratum, what kind of rollers to use, and where to obtain them.

Trusting you will give insertion to this enquiry in your Notes and Queries column,—Yours obediently,

GRENATINE.

## Correspondence.

### EXHIBITION OF THE PHOTOGRAPHIC SOCIETY.

SIR,—I have the honour to inform you that the forthcoming exhibition of the Photographic Society of Great Britain, which will include the works intended to compete for Mr. Crawshaw's prizes in portraiture and landscape, will be opened with a *conversazione* of the members and their friends at the Suffolk Street Gallery, Pall Mall, on Tuesday evening, 13th October, at seven o'clock.

The exhibition will remain open until the 5th November (Thursday), from 9 a.m. till dusk daily; also on the evenings of Monday and Saturday, as well as the last day, from 7 till 10 p.m. Admission will be granted by tickets issued by the members. A fee of one shilling will be charged to all who are not provided with members' tickets: evenings, sixpence; both to include the catalogue.

In order to afford time for properly classifying and hanging the pictures and preparing a detailed catalogue, it is requested that intending exhibitors will send in their works not later than the 7th October (carriage paid), accompanied by a letter of advice addressed to the Secretary at the Gallery. This letter should contain the title and description of the pictures, and such other particulars of processes, &c., as may with advantage appear in the catalogue. The prices also may be stated if the pictures are for sale.

As a matter of convenience, each frame should have the artist's name and subject written on the front; and, in the event of its being intended for the Crawshaw competition, that fact should also be announced.—I am, yours, &c.,

R. J. FRISWELL, F.C.S., Hon. Sec.

### THE DOUBLE PRINTING PROCESS.

SIR,—The following method of combination printing I have found to be quick and good:—Take the sitter against a white background, finish the negative in ordinary way without varnishing, dry well, and then paint with camel hair pencil over the figure with mixture of gelatine in saturated



solution of gallic acid; when well dry, immerse in bath of iodine in iodide of potassium until all the silver around the figure is changed into iodide of silver; wash and dip in negative bath, then expose under transparent positive; finish in ordinary way.

F. J. D.

### PICTORIAL BACKGROUNDS ADDED TO NEGATIVES.

MY DEAR SIR,—In your append to my letter in this day's PHOTOGRAPHIC NEWS, you say that the process "has produced a harsher, coarser result." Is this not a mistake? If not, it is in opposition to your former statement. Perhaps the background print I sent you was overdone; but harshness or coarseness is no inherent part of the process I recommend, as you will see by the enclosed print, which is from an old varnished negative treated with the graphite process without removing the varnish.

Since the first announcement of my method of producing pictorial backgrounds at pleasure, or after the sitting, I find that I can manipulate old varnished negatives as well as unvarnished films. In fact, it is a matter of indifference to me whether I re-sensitize the film immediately after washing, after drying, or years after varnishing; but I think the best results are obtained by re-sensitizing immediately after washing off the fixing solution. If the latter be resorted to, the bichromate must be washed out. This is easily done by allowing the whole of the surface to harden in the light, after developing the background with graphite, and then placing the negative in water until the bichromate is dissolved. Dry and varnish afterwards, and the negative is in its normal condition as regards intensity, light and shade, &c., only with the background added.—I remain, dear sir, yours truly,

J. WERGE.

11a, Berners Street, Oxford Street, Sept. 4th.

[The print accompanying this letter is soft and delicate, and quite free from harshness. We are not aware of any opposition in any of our respective statements on the subject.—Ed.]

### THE STATUS OF PHOTOGRAPHY.

SIR,—I cannot allow the letter of "A Photographer" to pass unanswered, as it seems to me to cast an unnecessary and undeserved slur upon a class of hard-working, conscientious men, who do the very best they can according to their light and ability.

I have for a long time had a violent attack of *cacæthes scribendi*, occasioned by the never-ceasing cries of those who are evidently opposed to free-trade, and would like to keep the practice of photography within their own narrow circle. They draw their line, I suppose, somewhere (but I notice it is usually a matter of *price*, not *quality*); but whether the line of superiority be 8s., 10s., 12s., 15s., or 21s. per dozen, I cannot fathom.

"A Photographer" thinks that low prices have caused the public to under-estimate photography. I think, on the contrary, that it is the execrable work turned out by a parcel of low, semi-educated men, of hybrid profession—half tobacconist, sweetstuff dealer, or fancy shopkeeper, and the other half supposedly photographer. It is not the price, for I know plenty of photographers who charge 10s. a dozen for cartes, whose work would disgrace a back slum; and, on the other hand, there are many who send out cartes at 5s. and 6s. per dozen, which would compare favorably with the best produced.

I know not in what way photography differs so essentially from ordinary business, and I do not clearly see why the well-known laws of supply and demand should not be applicable to it. The public of the middle and lower classes cannot afford to pay the higher prices, and as we can afford to produce a most excellent retouched portrait at the lower prices, why, in the name of common sense, should we not do it?

Surely, sir, in these enlightened days, it is an excess of

absurdity to talk about keeping up the prices in order to secure the *status* of photography, and to sneer (as very many do) at those who, finding the aristocratic market fully supplied, seek a livelihood elsewhere.

Many, like myself, have seen the wretched work given to the public at low prices; but nevertheless the public have accepted it *faute de mieux*. Some of us have resolved to give first-rate work at 5s. or 6s. a dozen, and to raise the status by producing artistic and well-finished work only. We have done it; the public appreciate our efforts, and crowd to us; it pays us well, and satisfies them. Now, I ask, are we raising or depressing the status? Let common fairness decide.

I am well aware that it would be unpleasant for a man to start a studio close to mine, and offer excellent cartes at 2s. 6d. per dozen; but I should simply bide my time. The matter would find its level. If I found the new man really could produce first-rate work at his quoted price, I should look around, and ascertain the "how" and the "why." I might conclude that it was time for me, in an advancing age, also to be up to the times, and try to meet a public want. If he turned out bad work, I should leave him to the public; I do not see that I should derive any benefit by taking any notice.

There are doctors who charge 5s., and those who charge 21s. per visit; but I am not aware that the status of the medical profession is lowered because the former offer the best advice for a moderate fee, and meet an urgent public want. The root of the matter is here. "A Photographer," and hundreds like him, are afraid that the same quality of work now done at 10s. will be done for 5s. Let me tell him that it undoubtedly will. It is useless to try the Partingtonian scheme of protecting the high prices. I assure him there are many as well qualified and educated as himself, who intend to produce the best they know how at the lowest remunerative price, just as in any other trade or profession. To my mind all the "high falutin" talk about "profession," and "status," and "atelier," and "client," smacks of the *parvenu*, trying to hoist himself into a position to which he has no claim whatever.

By all means let us associate together and help each other in every possible way; let us do our best, by imparting technical knowledge, to raise the *quality* of work, and the proficiency of operators, so that the inferior, careless, and disreputable may be driven to the wall; but pray, sir, do let us cease to talk such utter nonsense about "prices" as seems just now the fashion.—I remain, sir, yours truly,

PALMAM QUI MERUIT, FERAT.

### Talk in the Studio.

CORNWALL POLYTECHNIC EXHIBITION.—One or two omissions occurred in our correspondent's report of the awards at the exhibition. He says:—"A second silver medal was awarded at the recent exhibition of the Royal Cornwall Polytechnic Society to Mr. E. Smith's 'Warwickshire Lane.'" Mr. Smith's exhibits included a composition entitled "The Gleaner." The background shows a series of fields of uncut standing wheat, scarcely in keeping with the idea of gleanings, which generally follows the cutting of the corn. Messrs. Hudson and Purnell's picture is named "Crab and Lobster Hotel, Ventnor;" and Mr. Bennett Lowe's portrait, enlarged and printed in carbon, did not arrive in sufficient time to pass under the eyes of the judges. I must apologise that, in the hurry of writing to save mail for that week's publication, these notes should have been omitted."

DARK MOUNTS FOR CARD PORTRAITS.—We have already called attention to the effective mounting which has recently been adopted by some portraitists for cards. We have just received some examples from Mr. A. W. Wilson, of Kingsland, which are exceedingly charming. They consist of Rembrandt heads admirably posed and lighted, the bold and effective masses of light and shade being combined with perfect delicacy and fine modelling. The rich effect is much enhanced by the chocolate tint of the mounts, closely assimilated to the tone of



the prints. The retouching is effected with much skill and taste, and is, we are informed, the work of Mr. Carl Becker, of Dresden. For "Rembrandts" we especially commend the chocolate mount.

**REMBRANDT PORTRAITS.**—A writer in the *Brighton & Ivy Mail*, noticing in very high terms Mr. Boucher's portraits, says:—"As it is really a novel feature in photographic art, I was rather pleased with the Rembrandtesque portraits. The title given to these peculiar pictures is not a misnomer. Rembrandt's style consisted in throwing all the faces which he painted into strong relief by an intensely dark background, which extended its shadowy influence to a part of the countenance itself. This style has been most felicitously imitated by the Brighton artist, and is worthy of encouragement on all hands."

**THE ORIGIN OF THE TRIPOD STAND.**—Mr. E. L. Wilson, in some interesting sketches of his rambles whilst in Europe, details his visit to Vesuvius, after which he had a dream which clears up all mystery that may be connected with the origin of the photographic tripod, and ran thus:—"The Devil, who had heard that Vesuvius not only rivalled him in the overpowering influence of its sulphurous fumes, but also that the crater was ten times more to be feared than his most heated chamber, one day at dusk paid it a visit. He walked proudly up to the crater, tail in air, to the very verge, when, beholding its awful depths, he lapsed, dropped his tail to the earth, fell back upon it for support, and thus supplied the missing idea for the third leg of the tripod."

**CRACKING OF VARNISHED FILMS.**—A correspondent of Anthony's *Bulletin* mentions a recent experience relative to cracking films. He says:—"The negatives which remain good were evenly warmed (not made hot, a mistake too often made) before flowing the varnish, which was allowed to remain on the plate sufficiently long to permeate the film; after draining, held over the fire, taking care not to make the plate too hot until the varnish had set. After getting cold, they were set in the sun until they became quite hot; they were then taken in, and allowed to harden up, when they are prepared to stand any amount of hard work."

**ALL THE SUN'S RAYS ACTINIC.**—The power of chemical decomposition does not particularly belong to the violet end of the spectrum, but is found throughout its whole length. But bromide and iodide of silver, as used in collodion photography, are more readily decomposed by vibrations of certain lengths and periods than by others, and hence the excess of action seen at the violet end is a function of certain silver compounds, and not of the spectrum. Other substances, as carbonic acid, show maxima elsewhere, as in the yellow region. The solar beam is, therefore, not compounded of three forces—light, heat, and actinism—but it is a series of ethereal vibrations, which give rise to one or other of these manifestations of force, depending on the surface upon which it falls.—*Draper*.

## To Correspondents.

**AMERICAN.**—Your specimens are very good indeed for a youth of nineteen years, being, indeed, over, rather than under, the average run of portraiture supplied to the public. Printing and toning are excellent, the lighting good, posing generally good, but might, in one or two instances, be improved. The retouching is well done, but, in some cases, almost in excess, giving too much smoothness; but it is just what the public for the most part like.

**R. BLUNDELL.**—The toning bath with tungsate of soda gives very good results, but we have no reason to think that it is easier to work than the acetate bath, which is found, as a rule, to be one of the simplest and safest. You will certainly not get it to work well after it is dark coloured, nor, indeed, any other gold toning bath, as the dark colour marks decomposition. This dark colour may be due to various causes. If the toning bath is kept in the light, it is apt to precipitate the gold, and the solution will assume a purple tint. If the solution has been touched with soiled fingers—especially fingers which have touched hypo—it turns brown; but in all cases after the toning bath is discoloured there is an end of its usefulness; it may be thrown into the residues. Much depends upon the class of pictures, and the depth of tone, and the mode of working, as to how much paper a grain of gold will tone. Some think one sheet sufficient, some two, and some secure more. A sheet of vignettes would require much more gold than a sheet of fully printed-out Rembrandts. A trace of silver left in the paper before toning often aids toning. It has not much to do with the permanency of the picture, as all silver is of course removed in the hypo. The prints should be washed after toning, in order to avoid risk of decomposition of the hypo by any trace of acid in the print.

**M. L. F.**—You will see, from a letter in another column, that the Exhibition will be held next month. It was definitely resolved not to give medals this time.

**FERROTYPIST.**—Most of the conditions of obtaining a good collodion positive on glass are equally applicable to the production of a good ferrotype. In some cases it will happen, however, that the image which gave a good result on glass is not quite suitable for a ferrotype, and the dullness of which you complain in yours, as compared with what you used to obtain on glass, is very likely to arise from one of the causes to which we refer. When a thin collodion, yielding a thin, delicate image, is used for positive work on glass, if the image be of good colour, it will yield a fine picture if backed with velvet; if the back of the glass be black varnished, it will be a somewhat duller grey picture; and if the black varnish be applied to the collodion side, a very dull grey picture would result. The last position is very similar to that in the ferrotype plate: the image is in immediate contact with the black surface, and the thin image is not sufficiently opaque in the whites to give any brilliancy, but looks grey all over. You will see, then, that with the ferrotype plates it is necessary to use a collodion of good body, and one yielding a brilliant image. A good developer consists of fifteen grains of iron, fifteen minims of acetic acid, two minims of nitric acid, and one ounce of water. It is better a very few days' old, and we prefer to filter that which has been used back into the stock bottle. The trace of silver it holds in solution aids in securing a brilliant white image. Cyanide which has been used gives a whiter image than a fresh solution.

**R. HOULSON.**—We give your question place in the "Notes and Queries." We should, however, recommend glue in place of starch.

**HALCYON.**—The two lenses you require are only made by one maker, the one you name. You would not obtain them in any case of lenses, nor, indeed, of any French maker at all. You will find it wise to obtain them of the maker. 2. It is possible; but we cannot say with certainty. 3. Good; but not, we think, equal to those of the English maker.

**MELBOURNE.**—The best kind of crucibles for melting down residues are known as "London pots"; we do not remember the address where they can be purchased, but your London stock-dealer will doubtless obtain them for you. Occasionally they crack with the heat, and it is a good plan to make safe by using one within another. Plumbago crucibles are less liable to crack; but when the temperature is high they are sometimes attacked by the heat and flux, and so melt. 2. The proportions of flux you name are about right. 3. A printer has no right to print more copies from a negative than you order; and if he dispose of any copies so printed, he is guilty of dishonesty, which the law will punish. If a printer has printed more copies from your negative than you require, you cannot demand them without payment; but you can demand that they shall be destroyed; but we think that no printer would be so unwise as to act in such a dishonourable and dishonest fashion as you mention.

**S. W. O.**—The object of partially unscrewing the back lens in the patent lenses is to get depth of focus without loss of light. When you place a stop in a lens to gain depth of focus, you lessen the light and increase the exposure, which is avoided by unscrewing. The position of a sitting figure naturally favours the curvature of the lens, and hence it is not difficult, with most reasonably good lenses, to get the necessary parts of a sitting figure in focus. For standing figures you must use a lens of longer focus, or use a smaller aperture, or use a lens with specially flat field, in order to get good results. With the lens you use for cabinets you must use a small stop to get standing figures in satisfactory focus. A lens of the same diameter, but shorter focus, will be more rapid, but will not cover so well.

**ANATEIR.**—Your negative has not reached us.

**B. L. M.**—Your negative arrived in useless fragments. Placing a plate of glass between pieces of cardboard is worse than useless; worse, because it troubles us with innumerable dangerous splinters of glass, and nothing we can examine. A box should always be used. We append for your benefit and that of many others some hints sent us some time ago by Mr. G. T. Uohy as to the best mode of packing negatives for transit:—"A strong box filled quite full with bran or sawdust, the negatives being placed in centre wrapped separately in paper. Another is to tie the negatives tightly together, with a piece of blotting-paper between each negative; wrap them up firmly in a large cloth or wrapper until you make the parcel large enough to fill the box tightly (any old piece of soft material serves this purpose). Another very simple one is (say you want to send twenty negatives) to place a strong elastic band on the two ends of ten, then place the other ten alternately with these, putting a strong one round the whole, or tie them together firmly; wrap round in a sheet of cotton-wool, place them in a strong box, filling in the space with waste paper, or anything to keep them from shaking. I know these to be good and safe plans, never having found them fail."

**J. H. FREITASSEN.**—We do not know the address of the gentleman to whom your note was addressed. He does not reside in England. Our pages have, however, contained full details.

Several Correspondents in our next



## The Photographic News, September 18, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### PHOTOGRAPHIC STATISTICS.—THE ILLUSTRATION COMPANY—THE SAHARA DESERT PHOTOGRAPHED.

*Photographic Statistics.*—Here is some information about photographic societies and photographic literature for those who like statistics. There are at present twenty periodicals in the world devoted exclusively to photography, besides six annuals. Of the latter, two are published in this country, our own having been the prototype of all the others; two in America, *Photographic Mosaics*, and *Photographers' Friend Almanac*; one in France, *Annuel Photographique*, par Davanne; and one in Austria, *Photographische Zeitschrift*. Of the twenty periodicals that appear weekly, fortnightly, or monthly, there are at present three in England; two in India, *The Journal of the Bengal Photographic Society*, and *Indian Journal of Photography*; and as many as five in America, viz., *Philadelphia Photographer*, *Humphrey's Journal*, *Photographic World*, *Anthony's Photographic Bulletin*, and *Photographers' Friend*. There are three journals published in the French language, two in France and one in Belgium, the *Bulletin de la Société Française de Photographie*, the *Moniteur de la Photographie*, and the *Bulletin Belge*. A few months ago there were seven periodicals published in the German language, but of these, two (the *Heilos*, of Dresden, and *Licht*, of Berlin) have recently ceased to appear; of the five journals now appearing, two are published in Vienna, the *Photographische Correspondenz* and *Photographische Notizen*, one at Elberfeld, the *Photographisches Archiv*, and two at Berlin, the *Photographische Mittheilungen* and *Photographische Zeitung*, although the latter, we believe, has not appeared lately. There is one journal in the Dutch language, *De Navorscher op de Gebied der Photographie*, and one published in Italy, at Brindisi, entitled *Rivista Fotografica Universale*. As regards photographic societies, they are more numerous even than the periodicals, there being no less than twenty-eight societies now in existence for aiding progress in the art. Of these there are eleven in America, eight in Great Britain, four in Germany, including the Hamburg and Dresden societies, two in France, that of Paris and Marseilles, one in Austria, one in Holland, and one in Bengal. It is difficult to get an accurate statement of the number of members in these societies, but in the principal societies of London, Paris, Berlin, and Vienna, the members may be thus roughly put down:—The London Society at the last anniversary numbered 300 members; the Vienna Society has 280 members; the Society for the Advancement of Photography at Berlin has 220, and the sister society in the same capital, 240; the Paris Society has about 200 members; that of Dresden, 90, and that of Hamburg, 30.

*The Illustration Company.*—It is to be hoped that the new Illustration Company which has just been started, with so practical and experienced a director as Mr. Henry Blackburn, will afford a market for photographic work, and thus supply some incentive for photographers to make pictures such as might be suitable for illustrating letterpress. As a well-known author and artist, and also editor, Mr. Blackburn seems eminently qualified to act as a mediator between photographers and publishers, and there is every prospect of the former receiving fair payment for their work, instead of, as has been frequently the case of late, their works being copied, wholly or in part, without recognition. Photographers may now set to work to make *genre* and other pictures with good hope of reward, for hitherto the time and labour expended in the conception and carrying out of works of this kind were almost thrown away, for one could look for no return unless the picture happened to be noticed by the public, and a few score of copies were sold. For this reason but

few of our high class photographers occupied themselves with the production of these studies, for beyond a little honour and glory there was little else to be gained. The Illustration Company seeks to become a mediator between photographers and the public; and as the profits of the company is to be a percentage upon the sums paid over to photographers, it will be to its interest as well as to that of photographers that as many pictures are published as possible. The new concern is one more recognition of the art qualities and value of pictorial photographs, and we cannot but think that its establishment will be highly beneficial to the photographer in protecting his interests and finding a market for his commodities.

*The Sahara Desert Photographed.*—M. M. Remélé, who is accompanying Gerhard Rohlff's North African expedition as photographer, has been exceedingly successful in his work, and promises to bring back records of his journey such as have never yet been afforded us by African travellers. There is always a little disbelief attaching to the account of African travellers, and sometimes, as in the case of Du Chaillu, people at home refuse to listen altogether to the traveller's narrative. With M. Remélé's aid, it will be possible to bring back proofs secured by means of the camera which cannot be gainsaid; and if only such pictures can be reproduced and printed by a mechanical process, and employed as illustrations to a book, their value will be increased a hundredfold. The stock of glass plates and chemicals with the expedition appears to be exhaustless, and of the Sahara desert alone a series of sixty good pictures have been secured. This series forms one volume, or album, by itself, and the Viceroy of Egypt has expressed himself much pleased with the work; his opinion being, indeed, so favourable that he has requested that sixty albums be at once produced for himself alone. We are glad to hear, moreover, that M. Remélé contemplates the writing of a photographic report of the whole journey, which, besides being an interesting volume, will doubtless be of incalculable value to the travelling photographer in hot climates. The Berlin Society for the Advancement of Photography has the honour to number M. Remélé among its numbers, and it is to that body, therefore, that we must look for an account of his experiences in Africa. Some of the pictures have already reached Berlin, and are to be submitted to the society at an early date.

### ON THE PHOTOGRAPHIC TRANSPARENCY OF VARIOUS BODIES, AND ON THE PHOTOGRAPHIC EFFECTS OF METALLIC AND OTHER SPECTRA OBTAINED BY MEANS OF THE ELECTRIC SPARK.

BY W. A. MILLER, M.D., LL.D.\*

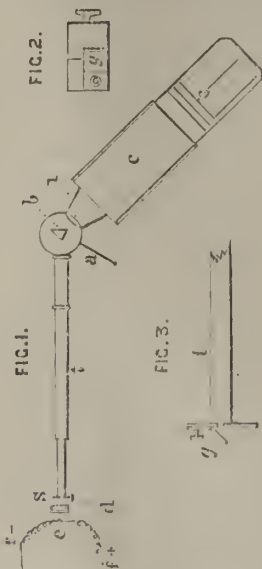
#### I.—ABSORPTION OF THE CHEMICAL RAYS.

##### a. By Transmission through Solids.

6. The general arrangement of the apparatus employed in this inquiry is represented in fig. 1, in which the observer is supposed to be looking down upon the instrument: *cc* is a camera which allows of a considerable range of adjustment, and is attached to a cylindrical box, within which is a prism *b* of rock crystal. At *l* is a quartz lens of 1½-inch aperture and 17½ inches focal length. At one end of the tube *t*, which can be lengthened or shortened by a sliding joint, is a slit *s*, provided with a screw for regulating the width of the opening. This slit is arranged parallel to the axis of the prism, and in these experiments was adjusted to a distance of 37 inches from the lens *l*. The prism is placed at about its angle of minimum deviation for the mean ray, and, for facility of manipulation, can be turned round upon its own axis by means of the lever *a*. The angle formed between the camera and the tube *t* also admits of variation as circumstances may



require. At *d* is placed the substance the transparency or which is to be tested; and at *e* are the metallic electrodes, which are connected with secondary wires *f, f'* of a 10-inch induction coil, not shown in the figure. The wires of the coil terminate in electrodes composed of fine silver. The coil



was excited by means of a battery consisting of five elements of Grove's construction, a condenser being included in the primary circuit, whilst a small Leyden jar, exposing about 75 square inches of metallic coating upon each of its surfaces, was introduced into the secondary circuit. In this way a torrent of sparks could be maintained between the electrodes at *e*, without any sensible variation of power, for ten minutes at a time, or longer if necessary. In these experiments an exposure of the sensitive plate for five minutes in the camera was requisite.

At a suitable distance behind the lens (about 26 inches\*), a collodion plate coated with iodide, or occasionally with a mixture of iodide and bromide of silver, was supported in the camera, for the purpose of receiving the image of the spectrum.† The plate was excited by the use of a bath of nitrate of silver containing 30 grains of the nitrate to an ounce of water. The image was developed in the usual way by means of pyrogallie acid, in the proportion of one grain to the ounce of water, and fixed with cyanide of potassium.

7. The spectra of electric sparks so obtained were remarkable for their great length; indeed they extended beyond the termination of the visible rays for a space equal to five or six times the length of the luminous portion.

For the convenience of comparing the results of the various experiments together, I have adopted an arbitrary fixed scale, the fiducial point of which is the line II in the solar spectrum. Calling this 100, the more refrangible rays are numbered onwards, and the less refrangible rays backwards

from it, the line B in the solar spectrum being at 84; the length of the spectrum from silver points extends from 96.5 upon this scale to 170.5. The solar spectrum for the purpose of this comparison was projected upon the collodion plate by means of a small mirror of polished steel (*g*, fig. 3) placed so as to form an angle of 45° with the surface of the plate carrying the slit, and to cover a portion of the vertical slit, as shown by an end view of the tube at *g*, fig. 2, whilst the direct image from the silver points fell simultaneously, parallel to that of the solar spectrum, upon the collodion plate in the camera.

(To be continued.)

## HOW TO AVOID UNNECESSARY WASTE OF TIME AND SILVER.

BY E. Z. WEBSTER.\*

In my first paper I endeavoured to impress upon the minds of my brother photographers the value and importance of saving time.

We will now proceed to the next and main subject under consideration, i.e., the unnecessary waste of silver, and how to avoid it; and as the making of the negative is the first use, there is the proper place to commence the saving of silver.

Although I do not propose to teach the art, or to criticise the pet formula or processes of my brother photographers, still I must give my own views upon all points bearing upon the subject under consideration; and while I would not arrogate to myself one tithe of the knowledge possessed by the many great and brilliant exponents of our beautiful art, still I believe there are scores of operators who have not yet "learned everything," and some things which I have learned may be of use to them.

One thing I have learned is this, viz., it don't pay to be everlastingly at war with our negative bath; and any man who tries to make his bath work all sorts of collodion, all sorts of developers, acids, alkalies, dirty plates, and everything else, will always be in a chronic state of perspiration and uncertainty, not to mention the immense amount of silver and other materials wasted.

A good forty-grain bath is the most reliable and best adapted to the various commercial collodions in the market; and, unless you are an adept, I would not advise you to confine yourself to "home-made" collodion.

See that every plate is absolutely clean upon the back and edges, and chemically pure upon the front, and free from dust when it goes into the bath, for dirty plates are an abomination—they spoil the picture, sour the temper, soil the bath, and disgust the sitter. Try to reduce your negative process down to the utmost certainty by careful attention to every detail of preparation, and then watch every shade of chemical change, thereby enabling you to nip disaster in the bud. The making of the negative is the most critical and the most important part in the photographic process. Volumes have been written upon the subject, and yet there is no one accepted rule or standard formula; but I will take it for granted that you know all about it.

Every operator knows that the negative solution must be free from all floating particles, as well as from chemical impurities. There are various means of remedying the latter, while the former must generally be filtered out; consequently, some operators are always filtering their bath, and the unnecessary waste of silver by so doing is surprising; the filters absorb large quantities of silver, to say nothing of the slops which seem almost unavoidable.

I weighed a new nine-inch filtering-paper, and then filtered the bath solution which I had been using, containing about one gallon. The filter before using weighed about 100 grains; the same filter, weighed when wet, and had stopped dripping, 306 grains, and, when thoroughly

\* This distance was found by experiment to give nearly a flat field, with the image of the slit formed by all the different rays in focus simultaneously. My friend and colleague, Professor J. C. Maxwell, kindly calculated for me the relative positions of lens and prism necessary to ensure an approximately flat field for the visible rays. If the lens be placed between the slit and the prism, a very great difference occurs between the points of convergence of the most refrangible and the least refrangible rays, amounting, with the lens and prism which I used, to nearly fourteen inches. When the lens is before the prism, both coincide in augmenting the convergence of the more refrangible rays; whereas, when the lens is placed behind the prism, the convergence occasioned by the lens is neutralized by the prism, which now acts in the opposite direction upon the diverging rays as they fall upon it from the slit.

† My friend Mr. Pizoy, who assisted me in these experiments, prepared the collodion for me, following nearly the directions given by Hardwich in his "Manual of Photographic Chemistry," sixth edition, page 262. It was iodized with a mixture of equal parts of iodides of potassium and cadmium, and was perfectly uniform in its action, even for weeks after it had been iodized, if kept in the dark.

\* Continued from page 44



dry again, it weighed 180 grains; another filter just like it which was used immediately after, weighed 150 grains when dry; while some old filters, which have come under my observation, were very much heavier. Of course, the larger the filter, the more solution is absorbed. The use of cotton may be more economical, still there will be great loss. And then, again, it is not always convenient to stop to filter. Now, if you will take a box of suitable size, minus a top, and set your bath into it (see fig. 1), and, just as soon as your

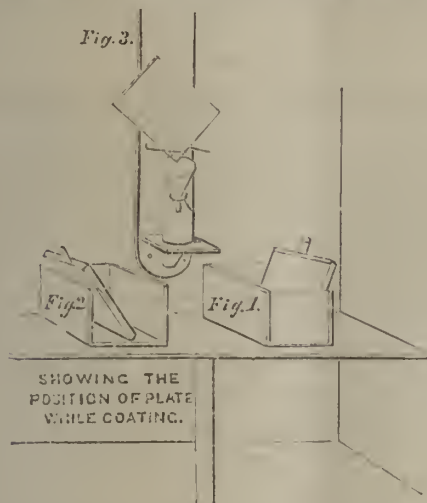


plate is dipped, tip it (the bath) forward (see fig. 2), and let it remain in that position until you are ready to remove it to the plate-holder, you will be astonished to see how free from pinholes your negative will be, and it will save you an immense amount of filtering. I have been practising this plan for many years, and am surprised that so few operators have adopted it. This box may be filled with warm water in cold, and with ice-water in hot weather, thereby securing a more uniform temperature of the solution. Much solution is allowed to drip upon the floor, and elsewhere, by unnecessary haste or carelessness in removing the plate from the bath. Of course there are times, and very often, when it is necessary "to push things," and then "quick" is the word, "hurry up the plate." Do not stop for the drip, but, if you are working large plates, it will pay you to fix up an arrangement like the one represented in fig. 3, which should be fastened to the wall of the dark-room at the proper height, and as close to your bath as possible, so as to avoid the waste of solution while passing the plate to position. While the plate is draining, you can get your plate-holder all in readiness, or coat and dip another plate, &c., and the silver which is saved is all ready to use again. It does not require refining, and is not subject to a royalty grab, nor does the silver which can be saved by following the suggestions contained in this series of papers. The main object to be kept in mind must be to retain the silver in the original, or some other workable form, by the simplest and most economical plan; and I will guarantee that the amount of silver which can be saved by a systematic routine of avoiding unnecessary waste will be twice as great, and no more troublesome, than the endeavor to regain your contaminated silver by sending it to the miller, who keeps the grist and sends you the toll.

(To be continued.)

#### THE TRANSIT OF VENUS.\*

WITHIN the next three weeks the last of the parties who are to observe the transit of Venus in December next will have left England. Its destination will be Egypt, and the

present intention is that one section of it should remain at Cairo, whilst another proceeds to Thebes, some 400 miles further up the Nile. At this latter place a private English expedition under Colonel Campbell will also be located, as will one from Russia under Dr. Döllen. Our official detachment at Thebes will be almost exclusively devoted to photographic observation. The original idea was that the whole of the staff should remain at the capital; but recent experiment has shown that the low altitude of the sun (viz.,  $15^\circ$  at the most important time of the phenomenon) was unfavourable for securing the highest results with photography. By moving to the south-east  $20^\circ$  will be obtained, and the certainty of a good record ensured.

Egypt as a station will be exceptionally circumstanced. At all the others longitude will have to be found by the slow and laborious process of human observations, whilst there it will be determined by telegraph direct from England. The importance of fixing the meridian of Cairo or Alexandria by this most accurate method can scarcely be overrated. Either of these places will be a most suitable point whence all countries to the east, if connected by cable with them, will be able to fix their relative positions with respect to Greenwich. For navigators, the ascertaining of the true longitude of distant ports is of vital interest, especially in regard to the rating of chronometers. Of the four expeditions which have already sailed there has been but little intelligence. We trust, however, that no one of them has suffered the loss that has occurred to that organized by the Indian Government, namely, of a valuable assortment of photographic chemicals, which were thrown overboard on the passage out from England. In this instance the damage is not irreparable; but in the case of any of the others it would be very serious. As ill news travels apace, we may have confidence that no such casualty has happened. About the 9th or 10th of December we, at home, may assume that we shall hear of the success, or the reverse, of the Egyptian party as regards the recording of the actual passage of Venus; and not many days afterwards we may hope to have tidings from Christ Church, New Zealand. Rodrigues, the Sandwich Islands, and Mauritius, where Lord Lindsay has his observatory, must take a longer time to transmit their news, their nearest telegraph stations being more distant. Some months may elapse before we receive the desired information from Kerguelen's Land; but if the reports from all of the other stations named be favourable, we may be tolerably confident that the final settlement of the true distance of the sun from ourselves has been accomplished. During the last transit in 1769 the observers were scarcely prepared for the phenomenon they were called upon to watch, the black drop or ligament which seems to the eye to connect the planet with the sun not having been sufficiently taken into consideration. A fairly wide margin for error in calculating the results was left, owing to the fact that the time of actual visual contact was doubtful through this unlooked-for feature. The coming transit will have this uncertainty eliminated from its observation. Every individual member of the expeditions will have an accurate knowledge of what he is to look for, a model of the planet passing over the sun's disc having been studied by them for months beforehand.

A hundred years ago who would have predicted that a transit of Venus could be painted so faithfully and perfectly that the pictures from the different observing stations should be a means of checking the accuracy of the eye? Yet, such has been the advance of science, that the comparatively new art of photography does this, and is made the docile servant of the astronomer. It is expected that the photographs of the sun taken during the crisis will become most valuable records. They will settle the knotty point as to the true time of the planet's contact should any discrepancy arise between the notes of individual observers. We can scarcely suppose that such discrepancy will occur, but with the knowledge that the

\* Daily News.



nerves, even of the most experienced, may be upset at a critical time, we cannot be too thankful that the black art will give unerring registration. Perhaps the most significant feature of all, and one which will live in the history of science, will be the application of photography to the coming event. Its employment may give a distinct method of calculation to the astronomer hitherto impossible. A negative picture (according to the instructions promulgated for guidance) is to be taken every two minutes whilst Venus is in transit. The exact time when the small exposure (the hundredth part of a second) is given is to be recorded by the aid of chronometers. The size of the sun's image will be somewhere about four inches in diameter, and this will bear magnifying to some hundred inches. Roughly speaking, each second of arc will be represented by the thirteenth part of an inch, a length easily subdivided to a much more minute fraction. Thus, by means of the negatives a small portion of a second of arc will be capable of being recognized, and the change in position of the planet during every few seconds of time will be appreciable. The apparent distance from the sun's centre of Venus at any particular instant will be readily measured, and the comparison of two suitable photographs taken at different latitudes on the earth's surface will enable additional verifications of the solar parallax to be made.

The possibility of obtaining such a large number of negatives during an interval of four hours is the result of the growth of photography in the last few years. The impracticability of using what is known as the ordinary "wet process" is patent to those who practise the art-science; the likely result of the use of chemicals in a confined space for such a length of time being to produce asphyxia, or something approaching to it, in the operators. The "dry plate process" which has been adopted is one which will enable the photographic staff to prepare their plates days, or even weeks, before they are required; and it will be unnecessary to develop the images until after the critical time. In other words, the sensitive plates will be exposed on the 9th of December, and the heavy labour of developing them executed at leisure on subsequent days. The ingenious plan that has been devised for registering the time of contact is worthy of notice. Originated by M. Laussen, the eminent French physicist, it has been carried into practical effect by Dr. de la Rue and Mr. Christie. Astronomers are well aware of the rate at which Venus travels, and they can judge by the eye of the position she will occupy on the sun's disc to within a few seconds of time. If fifty or sixty pictures of the limb of the latter be secured at intervals of a second, a few seconds before the time when it is judged that contact will take place, the exact instant will be shown by an inspection of them. In practice a circular glass plate of from eight to eleven inches in diameter is prepared for receiving the solar impressions, and is placed eccentrically in the focus of the telescope to which the camera is attached. The light is totally excluded from it, excepting through a small fixed opening of about one inch high by a quarter wide, which can be closed at pleasure by a simple contrivance. The plate revolves round its centre, the revolution being stopped at certain points by a very pretty piece of mechanism; whilst the stoppage takes place a brief exposure is given through the aperture above described. An interval of one second elapses between each such exposure, and if Venus and the sun's limb be focussed on the part of the plate opposite the opening, a succession of pictures on the edge of the plate will be impressed. One of these will record where contact has been made or broken. It is believed that this will give even closer accuracy than can be expected from visual observations.

The recent purposes to which the spectroscope has been applied have indicated that this instrument can also be advantageously employed for deciding the moment of contact. The Italians will use it almost to the exclusion

of any other method, and we believe we are correct in saying that at some English stations it will be held as an auxiliary weapon of attack. From the latest accounts received from abroad, there will be over sixty stations planted in the two hemispheres, where keen eyes will be waiting for the 9th of December. With all the requirements of scientific apparatus at present under command, we cannot but surmise that 1874 will be marked by the successful solution of that problem which has been before the minds of astronomers from the earliest period of history.

## THE PRACTICAL PRINTER IN AMERICA.

### VIII.

#### CUTTING PAPER.

In the next chapter Mr. Hearn is at home as the practical printer, and gives some excellent hints on economical cutting up of paper:—

"*Cutting the Paper.*—In cutting up the paper for printing due regard should be given to the materials employed. In the first place, the fingers should be free from anything that will stain or soil the paper, and they should never touch the *sliced* side, but always the *back*. The hands should be perfectly dry, free even from any perspiration, for if this is not strictly regarded in the handling of the paper, 'finger stains' will appear on those parts of the paper with which the fingers come in contact. To guard against this, a rough crash towel should be suspended in a convenient place, and the hands wiped upon it as often as may be found necessary—say once in every five or ten minutes. An ivory newspaper cutter, about eight inches long and an inch wide, together with a suitable sized pair of shears, will be all of the instruments necessary.

"In cutting the paper for very large prints, such as 13×16, 14×18, 16×20, &c., the beginner had best (to obtain the right size) lay over the sensitive paper the proper size mat that is to be placed over the print when finished, and then cut accordingly. Considerable paper can be saved in this way, and printed in card size.

"There should always be an assortment of different size mats in the printing room; one of each size will do, which should be kept expressly for this purpose.

"In cutting the paper for an 11×14 print, the length of the sheet is generally placed before the printer, and the paper bent over to the further edge of the sheet, and then creased, and thus cut into two equal pieces, one of which can be used for the contemplated print. I would recommend that instead of taking exactly one half of the sheet of paper, as described above, to take about *an inch more* than the half, so as to allow for any slight tear that may happen along the edges of the paper during the washing, toning, &c., and also so as to be sure of having the paper plenty wide enough for the different sized mats.

"I have seen some nice prints printed upon the exact half of a sheet of paper, which, when taken from the final washing (and the edges trimmed, being slightly torn), were then too narrow to be covered with the proper size mats, and had to be rejected; whereas, if in cutting this paper they had made allowance for this final trimming, the prints would have been saved. The rest of the sheet can be cut very well into sixteen or eighteen card pieces.

"In cutting cabinets out of a sheet, fifteen is all that can very well be obtained, and to get that number lay the sheet on a wide table, or printing bench (with the length of it running from right to left), and divide it into three equal parts. By laying the cabinet glass on these strips of paper, and cutting the paper a little wider than the glass, five cabinets can be obtained from each strip, and fifteen out of the whole. These pieces will be plenty large, both in length and width; besides, this is a very convenient and economical way to cut the paper without waste.

"By a glance at the cut (fig. 1) it will be seen that the



size of the pieces will be  $4\frac{1}{2} \times 6$  inches, and consequently there will be more room for the width than there will be for the length. The edges of the width side of the paper

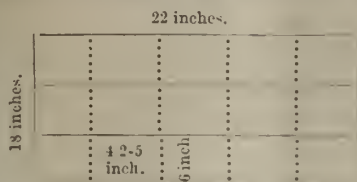


Fig. 1.

can be trimmed a little, as there is usually some little tear, or some other defect, that can thus advantageously be got rid of. Often when there are only a few cabinets to be printed, I take a quarter-sheet, and bend over the length of it to about three-quarters of an inch of the opposite side, crease it, and then cut with the paper-knife. You thus obtain a large and small piece; the smaller one of these can be cut into four cards, and the larger one can be cut in two, and thus obtain two generous size cabinets, or the printer can use the larger of the two pieces for printing the  $4 \times 4$  size. This is the way I obtain my  $4 \times 4$  pieces when I wish them.

"The beginner must remember that in bending over the length of a sheet of paper  $18 \times 22$  inches in size, the divided paper will be  $11 \times 18$  inches in size, which is termed, in the language of the printing room, half-sheet.

"To obtain the quarter-sheet, the length of the half-sheet is cut equally in two pieces, and then the size will be  $9 \times 11$  inches.

"A glance at fig. 2 will show that either a generous size

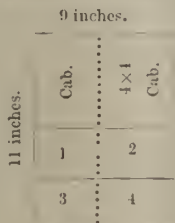


Fig. 2.

$4 \times 4$ , or a couple of nice cabinet pieces, together with four cartes, can be easily obtained from a quarter-sheet.

"To obtain thirty-two cartes, quarter the sheet, and divide each quarter into eight equal pieces.

"To obtain thirty-six pieces out of a sheet, it is necessary, for convenience, to first quarter it, and then divide it into three equal strips (fig. 3) taken from the length of

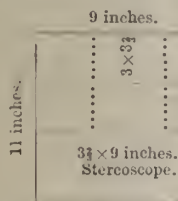


Fig. 3.

the paper. The pieces, as thus cut, will measure  $3\frac{1}{3} \times 9$  inches, which will answer admirably for the stereoscopic size. Each one of these strips of paper can be cut into three generous cartes, making nine out of a quarter, and thirty-six out of a whole sheet.

"Forty-two cartes can be obtained very neatly by laying the sheet before you (fig. 4), and dividing the length into seven equal parts; when done, each strip should measure  $3\frac{1}{2} \times 18$  inches. Now, out of each of these seven strips of paper there can be six pieces of paper cut, which will be  $3 \times 3\frac{1}{2}$  inches in size. The whole number of pieces will be forty-two. It will be seen that the size of the carte pieces

( $3 \times 3\frac{1}{2}$  inches) does not allow but a very little room for waste paper in trimming after printing, and thus it will be

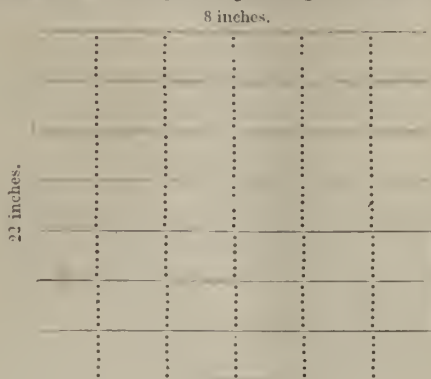


Fig. 4.

found necessary to exercise some care in placing these pieces on the negative for printing.

"To obtain the forty-two card pieces from the sheet without waste, great care is required in the sensitizing of the paper to prevent tearing, and also to prevent silver from getting on the back of it; and in the cutting of it to use either the shears or the paper-knife with care, and do not tear the paper with the hands, as is very often done especially when the printer is in a hurry.

"In making out the above, I have considered the sheet of paper to be  $18 \times 22$  inches in size, but it is seldom that the sheet measures exactly this, for the length oftens measures from one quarter to one inch more, but never less, while the width is invariably the same. When this is the case, a little better margin is allowed in cutting the sheet up, which is a good thing, especially when a large number of small pieces are to be obtained from the sheet. Forty-two pieces is all that should be obtained from a sheet of paper which measures  $18 \times 22$  (or  $18 \times 22\frac{1}{2}$ , &c.) inches, because the pieces of paper are now as small as they should be with safe results to the prints, on account of bad edges, &c., which it is often necessary to trim after printing. There is a way to obtain forty-eight, and even fifty-two pieces of paper from the sheet, but I would not advise any of my readers to try to obtain that quantity, as there are many disadvantages connected with it that more than neutralize the benefits. The paper is sometimes cut up to the exact carte size, and then printed up as it is, thus saving the trimming of the prints after printing. This is, perhaps (?), a good way, but for the beginner it is very risky, because the paper will have to be placed exactly on the negative, or else the print will be worthless. Even to the experienced printer this is very difficult, because the greatest care and skill are required to do it as it should be done; then the inexperienced printer could not hope to do it successfully.

**DIFFERENCES IN SOLAR HEAT.**—In the abstract, by the *Scientific American*, of the papers read before the American Association for the Advancement of Science, Professor J. P. Langley is reported as saying that "there is a variation in both the heat and light, and probably also in the actinic force, of different parts of the sun. The difference is due principally, but not wholly, to difference in atmospheric absorption. It does not appear, as the result of experiments, that there is so great a selective absorption of heat in the lower regions of the sun's atmosphere, that, when rays come from the edge of the disc and pass through a greater proportional thickness of his atmosphere, the heat is filtered from them, and the light allowed to go through. We find that the heat falls so very rapidly toward the edge as to indicate a much greater thinness of the solar chromosphere than has been hitherto admitted. We appear to have been led to the conclusion that there is a local obscuration over the spot, very remarkable both in degree and kind."



# The Photographic News.

Vol. XVIII. No. 837.—SEPTEMBER 18, 1874.

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## THE FORTHCOMING PHOTOGRAPHIC EXHIBITION.

FROM an announcement in our last, our readers have learnt that the exhibition of the Photographic Society will be held within a month of the present date, opening on the evening of Tuesday, the thirteenth of October, in the Suffolk Street Gallery, Pall Mall, a conversazione being held on the opening night in accordance with the custom of the last few years. Under existing circumstances, special effort will be required on the part of everybody concerned to make the forthcoming exhibition a success—perhaps, indeed, to prevent its being a failure; but if every one who has any duty to perform, every one who can use any effort or influence in relation to the matter, will put his heart into it, with a resolve that there shall be no shortcoming, success will be certain. The unhappy dissensions in the society wasted much time, and dissipated some enthusiasm which would have been well applied in preparation for the exhibition; the same circumstances led to the necessity of placing exhibition arrangements in new and less experienced hands. There will be no medals distributed; there has been great difficulty in securing a suitable room, and this has caused delay, and the delay has excited doubts and fears as to the exhibition being held at all: and none of these things, naturally, conduce to success. But the legitimate issue of all these should be an earnest resolve by every well-wisher of the society to aid in securing success. The time is short, but there is still time before the seventh of October—by which time all contributions must be forwarded to the secretary—for every photographer who has exhibited before, for every member of the society that can produce anything worthy, to prepare, and send in good specimens of the present capacity of the art. Whatever value may attach to other modes of action of the society, the value of its exhibition is beyond cavil. It furnishes from year to year landmarks of progress, standards of excellence, and stimulants to higher effort. It permits each photographer to test his own position, and to gain suggestions for improving it. It affords to every photographer the one priceless opportunity of seeing what can be done, what is doing, and what should be done in his art. The very effort to produce something worthy of exhibition which each con-

tributor makes is in itself a valuable education. The exhibition is, in short, at once instructive and delightful to everybody, except the few unhappily constituted persons who find gall and wormwood in everything connected with another's success.

That the exhibition furnishes one of the pleasurable anticipations of the year, there can be no doubt; and that it is a pleasure in every way connected with profit and advantage, there can be equally little doubt. Failure, or even falling off, would be especially disastrous, and also in some sense discreditable, alike to those who initiated and carried on the agitation in the society, and to those who suffered such agitation to interfere with the legitimate work of the society. Every one, no matter what his relation may have been to the late agitation, is concerned, therefore, to aid in avoiding failure or falling off. Nothing so readily promotes good feeling, nothing so efficiently cements it, as engaging together in good work, and we hope to see every trace of bitter feeling buried and forgotten in the exultation over one or more successful exhibitions. Without discussing the general desirability of giving medals at such exhibitions, we think every one will agree that it was wise to suspend the practice at the present, and so remove one possible bone of contention—one possible source of heartburning. The competition this time will be for no stake but honour; for no honour but public appreciation. Each will enter it challenging his brother competitor as

“— Brother should a brother dare  
To gentle exercise and proof of arms.”

It will be especially interesting and desirable under such circumstances, therefore, to see that there is no slackness or indifference in producing high-class work for exhibition, and showing to the public the real claims of photography to status and recognition. There is, however, very little time; and therefore the more need for energy. If the “sword be too short,” let each contributor “add a step to it.”

As our readers know, the competing pictures for Mr. Crawshaw's prizes will form part of the same exhibition, being, however, hung all together in one part of the room. As these will consist of landscapes as well as portraits, they will doubtless materially add to the interest of the exhibition. Intending competitors for those prizes should remember that their contributions must be sent to the Suffolk Street Gallery not later than the seventh proximo; that they should be addressed to the Secretary of the Photographic Society, distinctly marked on the outside of the case that they are intended for the Crawshaw Competition; and that a letter of advice containing all necessary details should accompany them.

The general arrangements as to the admission of members and their friends will be the same as heretofore. This exhibition will open with a conversazione, and will continue open for three weeks, from nine in the morning until dusk, and on Monday and Saturday evenings from seven to ten, to enable operators and others engaged during the daytime to be present.

## PHOTOGRAPHIC PROGRESS.

THE *Home Journal*, a high-class paper published in New York, has an interesting article on the progress of photography, based on a notice of one of the recent Conventions of the National Photographic Association. The Association, it remarks, “has now over twelve hundred members, with branches all over the land; and its last meeting was the most important ever held, the attendance of members being large, and the display of photographs remarkably fine. Considering how the old strife has given place to cordiality among photographers, and secrecy to open doors, it is evident that the American photographer is awakening to a sense of his highest needs |



So wonderful and great has been the growth of photography in this country since the late Professor Morse took the first sun-picture in America, in this city, that those who now practise the art are counted by thousands, while the amount of capital invested can only be estimated by millions of dollars. The photographer is now everywhere recognized as an artist; to be anything else is to fail to secure the patronage of an intelligent public. And it is plain that if they are the literal descendants of such men as Phidias, Michael Angelo, and Rembrandt, there must be a glorious accumulation of wisdom and experience worthy of their attention. Recognizing the fact that artistic education is the present all-absorbing and imperative need of the day, the photographers of the United States have organized for mutual improvement, and this is what renders their annual meetings events of so much importance to all who are interested in the development of art."

After referring to various important applications of the art, the writer proceeds:—

"Thoroughly trained operators are difficult to get, and the printing department often suffers for the want of capable assistants. Recognizing this latter want, the National Photographic Association has asked Congress for an appropriation of thirty thousand dollars for the establishment of a Photographic Institute for the instruction of pupils in the art of photography in all its branches. Why may not this be a new field of labour opened for women? With a suitable training it seems to us they might easily acquire the skillfulness necessary for printing photographs. And, instead of asking Congress to establish a school of photography, the better way would be for some one to found a chair of photographic art in connection with colleges already established, as at Cornell University, Vassar College, or the University of Michigan. The sum asked is so small, we think little difficulty would be experienced in obtaining it from private individuals. Girls need this employment more than boys, and if the door to it is not opened in any other direction, let the Cooper Institute or the Normal College of this city prepare the way."

The article concludes by giving an interesting letter by Professor Morse, remarking:—"The best way to note progress is to contrast the past with the present; and we cannot do this better than by presenting to our readers a never-before published letter from the late Professor Samuel F. B. Morse, written shortly before he died, to Dr. Fuller-Walker, the editor of *The Aldine*, in which he gives an account of the first Daguerreotype ever taken in America. The letter is as follows:—

"*Poughkeepsie, August 14th, 1871.*

"DEAR SIR.—In the spring of 1839, just before leaving Paris on my return home, I formed the acquaintance of M. Daguerre, the reputed discoverer of photography. The proposition to give him an annuity on condition of his revealing to the world his wonderful process was before the Chamber of Deputies, and had not yet passed the requisite forms. I learned from him that so soon as the bill was passed he had ready for publication the details of his process. I then requested that so soon as it was published he would remit me a copy of his work. This he promised, and accordingly, in the late summer or autumn of 1839, I received a copy, and immediately had constructed the apparatus as therein given in detail. Its first trial I made upon a plate of plated copper procured in a hardware store. It was about the size of a common playing card. I adjusted the apparatus at a back window on the stairway on the back of the University, and the object to be taken was the Unitarian Church, now a theatre, opposite the New York hotel in Broadway. The hotel was not then built, so that I had a clear view of the church. I was successful in obtaining an impression, although, owing to the impurities of the silver upon the plate, it was defective; yet it assured me that the process was genuine.

This, I believe, was the first Daguerreotype ever taken in America. With sincere respect, your obedient servant,  
To Fuller-Walker, M.D. SAMUEL F. B. MORSE.

## CAMPHOR IN THE PRINTING BATH.

BY WILLIAM BROOKS.

SOME time since, in these pages, I called attention to the use of camphor in the printing bath. It was Mr. Clemons who first drew my attention to it for keeping the bath free from albumen and colour, which answers the purpose admirably; and by using it I found that it had power of entirely doing away with blistering of the albumen. It seems to render the film of albumen quite porous, without injuring it in any way, and thereby letting the air or water pass freely through it.

What I wish to call attention to now is to correct the mistakes of several who have tried it, and have failed to gain the result required. I said, keep a lump of camphor floating in the bath (bottle). The reason of the failure is, that many have put a lump of camphor in the bottle (when they have been troubled with blistering), and just given it a shake and used it at once. That is not the slightest use: it takes time for sufficient camphor to be absorbed by the water before it will have the desired effect.

The best way of making up a new bath (forty or sixty grains to the ounce, according to the salting of the paper employed) is to place (say) half an ounce of camphor in half a gallon of distilled water, and let it remain for several days—it will improve the longer it is kept—to effect complete saturation; then use it to make the bath, and then always keep a lump floating on its surface (in the bottle), and by that means the solution is in a state of complete saturation. In my hands, by its use as described, blistering seems impossible.

I see by your impression of September 11th, in the "American Correspondence," Mr. Hearn, in his formula, strongly recommends it as a safeguard against blistering.

I think camphor may in many other branches of photography be pressed into service.

## ON THE ACTION OF COLOURS UPON BROMIDE OF SILVER.

BY DR. H. VOGEL.\*

IN the last issue of this journal I mentioned some criticisms made by Dr. Van Monekhoven upon my researches, and in consequence of these strictures I felt it incumbent on myself to forward to Dr. Monekhoven some bromide plates of mine, which showed most perfectly the action of the red and yellow light. My honoured friend and colleague thereupon sent me some spectrum pictures, which he had previously taken, together with the following letter:—

"... You will see from my plates that it is not necessary, in order to secure a picture of the sun's spectrum upon bromide of silver, to expose for minutes, but only for seconds, even with a slit which is ten times as narrow as your own.

"In the pictures forwarded by you, a double action of the light is quite evident, and I am surprised that an attentive mind like yours should have passed over the matter without having divined its course. The case is thus:—The light at first acted as usual—that is, in a very brief period (in your experiments perhaps in less than a second)—giving an impression from the violet as far as the bluish green. Then, at the end of several seconds, your collodion plate was attacked by diffused light, which suffuses the whole plate, and comes from the prism. Finally, the red and yellow rays of the spectrum acted as continuant rays, and here certainly the tinting of the film by means of corallin, &c., has played its rôle.

"In this sense, therefore, your discovery is a sound one. I hope that in this connection you will repeat the experiments of M. Beequerel, who has not observed the phenomenon that the sensitiveness of the film changes with its colour.

\* *Photographisches Mittheilungen.*



"I resume my view of the matter thus:—To secure a photographic impression upon bromide of silver, only a few seconds' exposure are necessary, even with a very narrow slit in the spectroscope. The violet, blue, and green rays act in this case, and, as I believe, quite independently of the colour of the bromide of silver.

"If, however, the bromide of silver is first of all exposed to diffused white light, and then to the action of the spectrum, the maximum of action will take place where the absorption of the colour added is greatest.

"It is in this sense that we must look upon the phenomenon, and if I can be of any use to you, I shall be very willing to repeat experiments in this direction. I authorize you, should you desire it, to publish this letter in your valuable journal.—Your friend,  
MONCKHOVEN.

"Ghent, July 11, 1874."

I am very willing to publish my friend's opinion on the subject.

As it will be seen, after an examination of my spectrum pictures, Dr. Monckhoven now regards my discovery as a sound one, only he gives another explanation of the phenomenon, drawing a distinction between creating and continuing rays. I expressed my opinion last year that such a distinction did not exist—that *all* rays are shown to be chemically active. Herschel found that red rays acted chemically upon salts of iron. Becquerel's assertion that yellow rays only are capable of exerting a continuing action which blue and other so-called chemical rays have started, is only a theory in explanation of certain appearances, which may be explained in a much more simple and easy manner without the assumption of the existence of continuing rays. Becquerel found out that chloride of silver or bromide of silver, if exposed for a short time to daylight, is then sensitive for yellow rays, which otherwise it is insensitive to, and for this reason he calls the latter rays continuing rays, because they are only capable of continuing the action of the white light. The matter, however, is to be explained in quite a different way. By the slight action of diffused light, sub-chloride of silver is produced, which is sensitive to the yellow rays of the spectrum, and it is no wonder, therefore, that a more rapid action takes place than usual.

When subchloride of silver is produced in a purely chemical manner, without the aid of light, and is exposed to yellow rays, an action will be at once apparent.

How weak Becquerel's theory on the matter is, is proved by the numerous experiments of extra-lighting, which Gaensli conducted in America. This investigator prepared plates which would allow of no chemical rays to pass, and which, by extra lighting, subsequently showed a slight action. The matter appeared quite right; but when, instead of after-lighting, a preliminary exposure was given instead, exactly the same action was obtained; in this case, therefore, the so-called continuing rays had not *continued* the action, but *commenced* it, and were, therefore, *rayons excitateurs*. After such a result as this, those who like may believe in *rayons continuatours*. I repeat what I have previously said, when a subsequent exposure acts at all, chemically-working light is brought into play, which adds to the action already commenced.

But even taking the case that red and yellow may act as continuing rays, I can easily prove that such an action has not taken place in my experiments, at all events.

If, for instance, Dr. Monckhoven's view were right, then my pure bromide of silver plates ought to behave as Becquerel describes. The former says that in his plates two maxima of action were to be seen, one in the blue and the other in the yellow. This is not the case with my white bromide of silver plates, for they show quite a uniformly gradual decrease in the sensitiveness of the blue towards the yellow and red.

Much less does Dr. Monckhoven's view harmonise with another phenomenon that I have not yet described. With the increase of sensitiveness for yellow or red by the

addition of colour to the film, the decrease of sensitiveness for the more refrangible colours goes on hand-in-hand. The theory of continuing rays cannot explain this phenomenon.

In the most definite manner, however, do my coloured plates show the fallacy of Dr. Monckhoven's idea. These demonstrate exactly the reverse of what he assumes. He says that at first the action of the violet and blue rays begins; then the action of the diffused light; then, for the first time, the action of the yellow rays, which continues the impression of the diffused light. The plates coloured with naphthaline red, however, prove as follows:—Exposure for a short time gives only an action of the yellow light, and of the blue not a trace; only after the exposure has been prolonged does the action extend to the green, and, after some time again, as far as the blue and violet; but the impression was much less vigorous than that of the yellow. Such facts as these prove beyond question that the action does not begin by means of the blue rays, and continue with the yellow. Indeed, it would be more logical, in this case, to term the yellow rays *rayons excitateurs*, and the blue ones *rayons continuatours*.

### THE INFLUENCE OF TEMPERATURE IN PHOTOGRAPHY.

BY LEOPOLD BACHRICH.\*

ABOUT light and its influence in photography so much has already been said that one may regard the theme as well nigh exhausted; but temperature is a subject which has been but seldom discussed, notwithstanding the many defects which are clearly traceable to it. These defects are to be found more often in some studios than in others, because, in some cases, the studio is situated on the ground floor, in a cool and even temperature, while in others it is placed on the roof of a tall building, where it is of course subject to every change of temperature. According to the degree of warmth, different defects are to be found, just as much in the cold months of winter as in the hot summer days, and these have all to be combated by the photographer.

The photographic phenomena during the cold season may be almost always removed by artificial heating of the room. A warmer temperature is maintained in the laboratory, and the temperature of the chemicals is in this way heightened. Most of my colleagues know what it is to place their bath and developer over-night in a warm (or, at any rate, temperate) locality, ready for use in the morning. But in summer time it is not so easy to combat the effects of temperature, and I will here enumerate such difficulties as I have experienced during the past summer, and the manner in which I have sought to overcome them, prefacing my remarks with the statement that, as my studio is on the fifth floor, I am greatly at the mercy of the sun.

A very well known evil during hot weather is fogging upon the plate. To prevent this I place the bottle containing the dipping bath early in the morning in a vessel of ice, and add as much acid as it will bear. Acid can be added so long as the collodion film sticks to the plates on intensifying. I have found it very profitable to employ old silver baths as much as possible during the summer; those which have been put on one side in winter, as being too old, often furnishing the best results. I always have a few baths of this kind, and never use perfectly new ones, and need not fear fogging, even if there is no ice at hand.

After putting the prepared plate into the dark slide, I cover the back with a moist rag that has been lying upon a piece of ice, and is first of all well squeezed. To the developer I add one-third water, so that instead of twenty ounces there are thirty ounces of water to every ounce of iron. The iodizing of my collodion I modify in the summer so that iodide of ammonium predominates; under these

\* Photographische Correspondenz.



circumstances the film—even when it remains a long time in the slide—does not show dry spots very soon, and intensifying to any degree is unnecessary. The softness of the picture is not injured; but I recommend the employment of not too thin a collodion.

To the pyrogallic acid I add nearly double the amount of acetic acid that is usual. The plates should not be dipped into the bath too soon, but the ether should be allowed to evaporate thoroughly, even if the corners of the plate become dry, for there is usually sufficient margin upon the plate not to interfere with the picture. A trial plate will show whether you have waited too long or not. Too quick immersion in the silver bath brings about a number of streaks, and especially in those parts where the collodion has been applied, circular markings appearing one upon the other; and when the silver bath is too strong, as is often the case in summer, there are, besides, pinholes without number to be seen.

A second class of phenomena which, despite application of ice, has caused me much annoyance, and which was the more noticeable the higher the temperature, was the reversal of the shadows when intensifying. I mean that those parts of the negative which ought to remain clear and transparent became covered. After the intensifying solution (silver and pyrogallic acid) commenced to act, the margins of the plate began to colour where the collodion drained off. First of all a light yellow tint was perceptible, and then gradually this extended to the shadows of the picture, becoming more and more intense, so that at last they were of a dark brown; in printing, therefore, white patches are produced where the deepest shadows ought really to be.

Such a phenomenon as this is calculated to give the photographer—especially if he happens to be an inexperienced amateur—endless trouble, for he knows not how to help himself, and one plate after the other fails without his being able to divine the cause. Even laborious retouching is powerless to set matters right.

I am convinced that many of my colleagues who suffer from this evil, and do not yet know a method of combating it, will find my plan of operating affords a successful solution of the problem. The phenomenon is due simply to the alkaline nature of the water used for washing, and it is but necessary, therefore, as soon as one is troubled with the difficulty in question, to add to the water a little common vinegar, which will be found quite sufficient to overcome the difficulty. The water for use should be renewed daily, and a fresh quantity of vinegar added.

## ENLARGEMENTS.

BY A. HESLER.\*

No photographer can expect to make good enlargements on first trials, except by accident. To make a suitable transparency by any process, from which to make a good enlargement, requires the same care and practice that are necessary to produce a good negative. The conditions required are a structureless film, clear manipulation, just the right exposure and development to give all the detail, and no more. The appliances to make a transparency I will not describe, as they are so well known, having been published over and over again in nearly or quite all the treatises on the art.

Everything in readiness, we proceed to make the transparency; for this the regular collodion process is of course the most convenient, and the least trouble. The simplest and best way to attain good results (where the negative is the size you desire the transparency), is to coat your plates with your regular collodion (this and the bath must be so in harmony as to produce perfectly clear glass in the extreme high-lights); pass a small rubber band over each end of your negative from which you are to make the transparency;

place in your holder; against this place your coated and well drained plate for the transparency; close your holder, and place in your camera as if to make an exposure for a sitting. only use no lens. Take the front board and tube away from the box; extend the bellows to its greatest length; turn the box toward a white screen under your sky-light, or to the clear sky through an open window; draw your slide, and expose as long as your experience dictates, usually from one to ten seconds. After exposure, develop with a very weak iron developer, about one quarter the usual strength; or, better still, use pyro-developer made after usual formula, care being taken to have the silver used very acid with C. P. nitric acid (this will prevent fogging or stains). Clear up with hypo-soda, and wash thoroughly. If you have over-exposed your plate, the shadows will be too much developed—not enough contrast; if under-exposed, the detail in the high-lights will not be out. Remember this rule in all developing processes. For intense negatives over-time and use weaker developer; for weak negatives, under-time and use stronger developer. To those who have enough of this enlargement to do, and will become familiar with it, the Edwards process is, to my mind, the best that we have; but the following, in most hands, will be found quite as good, perhaps better:—Take good porcelain collodion, and proceed to coat your glass for transparency (the glass having been previously clean and albumenized) the same as though you were making a porcelain. Print from negative in usual way sufficiently, so that when toned and looking through the transparency, all the detail in both high-light and shadow will be seen. A suitable transparency made in this way will give an almost faultless enlargement. I have used also Carey Lea's dry process with success, and secured some very fine transparencies.

## PORCELAIN AND WATCH-DIAL PORTRAITS.

BY WILLIAM SHAW.\*

The porcelain glass should be selected with the utmost care. Watch-dials, of course, will have to be taken as they come. Wash your plate or dial in a solution of lye, then rinse with water, and place them in a moderately strong solution of sulphuric acid and water; wash thoroughly, and leave plates or dials in a dish containing pure water.

Prepare albumen solution as follows:—In a quart bottle put in some pieces of broken glass; drop in the white of an egg, to which add twenty ounces water, and one drachm liquid ammonia; shake thoroughly; let stand until settled, then filter through a very fine sponge. Albumenize your plate or dial, and set away on blotting paper, in some place free from dust, until dry. When dry, flow with collodio-chloride, which you will make as follows: In a bottle put one ounce of alcohol; add eight grains citric acid, eight grains chloride strontium. In another bottle put four ounces ether, and three ounces alcohol. Now, in a small mortar put forty grains nitrate of silver, which incorporate in the alcohol and ether by speedily and effectually triturating it before evaporation of the ether. When this is done, add fifty grains guaiacum, and shake until dissolved. A few drops of water may be ground up with the silver before the alcohol and ether are added. Now add (in the dark room), a small quantity at a time, the solution of citric acid and strontium, shaking thoroughly after each addition. Let settle. Shake up the collodio-chloride half an hour before using. If, after a few weeks, the collodio-chloride shows lack of sensitiveness, add two or three drops liquid ammonia. After flowing plate or dial, and when dry, fume five to ten seconds.

Toning.—Wet your plate or dial with pure water, then pour over a weak solution of bicarbonate soda; wash thoroughly, and tone in your regular gold bath after your prints. Before toning the porcelain, add a few drops acetic acid No. 8, until blue litmus paper is reddened. Tone same as prints, wash, and fix in regular hypo bath.



## STEREOSCOPES.

BY J. H. E.

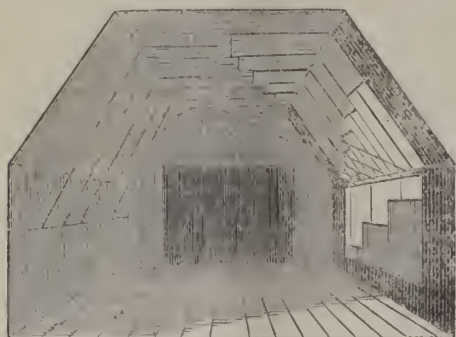
I HAVE never been able to ascertain why it is usual to blacken the insides of stereoscopes, and it appears to me to be a mistake to do so. In the common form, the light is admitted through a small window in the front part of the instrument. This window is only slightly above the picture, and only admits light from the front. The photograph, therefore, is in the best possible position for any roughness in the paper to be made unpleasantly apparent; the cavities, being lighted on one side and dark on the opposite, are distinctly visible, which would not be the case if the light was reflected, or, still better, admitted from all sides, or vertically.

It is only in viewing a transparency that any advantage is gained by the complete darkness of the inside of the stereoscope, and, as nine-tenths of the pictures viewed are paper photographs, it would be better to make the instruments adapted to seeing pictures of that description with the best effect.

## Correspondence.

## BLINDS IN THE STUDIO.

SIR,—Some time ago, I saw in the *News* a system of working blinds in the studio, by Dr. Vogel. I worked that system formerly, but have discarded it, as I found it awkward to work, having to push the blinds aside with a long rod: it required the eyes of the operator to be directed to the blind to be moved, therefore the strong light of skylight striking the eyes of the operator makes it difficult to see the effect of the light on the sitter, so I devised the following, which removes that objection. The cost is trifling, doing away with spring rollers, and only requiring a rod length of skylight and a few pulleys. It is also very easy to work, as I can open or shut our whole window in less than half a minute. The rod which we used formerly at top of skylight for curtains to slide on we now use for blinds to draw over, as shown in diagram. Size of blinds



about two feet by length of skylight, with a seam at top and bottom to receive rod an inch by half inch, same as in foot of ordinary window blinds; a cord is attached to top of blind, and passed over rod at top of skylight, then through double pulley at eaves down through pulley on back wall, up through same double pulley down, through pulley at foot of skylight, attached to foot of blind, as shown. The blinds require to overlap each other two or three inches, as they are apt to shift a little from side to side in working. The side blinds are worked with a pulley at top and bottom of side light, with an endless cord and blind attached, as shown, with a thumb-screw through cheek of block to press on pulley, regulated so as to support the weight of blind when up.—I am, sir, yours truly, JOHN S. BURNER.

## THE STATUS OF PHOTOGRAPHY.

SIR,—I think the ideas of your correspondent, "*Palmar qui meruit ferat*," on the effect of prices on the status of photography, very erroneous. Although a low price does not, as a matter of course, imply inferiority of quality, still I think it must be acknowledged that the tendency of low prices is certainly in that direction.

We will suppose the case of two photographers, the one working for just half the prices of the other: of course it follows that one will have to do double the amount of business to realize the same amount of profit, and, consequently, being more pushed with business, will have less time to devote to his patrons, and, consequently, be under greater temptation to scamp his work; whilst the other, having more time to devote to his sitters, the retouching of negatives, and the various branches of the art which require time and study, will be able to do so with less strain upon himself, and therefore with greater probability of success.

It is a well known fact that many people judge of an article—especially a work of art—more by the price than by its real intrinsic merits. In my practice I rarely meet with any who grumble at the price; far oftener I hear such remarks as these: "I would rather pay more, if by doing so I can have a better picture;" or, "I don't mind how much I pay if I can get a first-class carte," &c.; thus clearly showing that excellence and high prices are most naturally linked together in the public mind. Now, I do not for a moment dispute your correspondent's right to produce first-class work at barely remunerative prices, but I do think it foolish and unnecessary to do so, as I take it that, at the present time, both middle and working classes are quite able to pay a reasonable price for good work, and will appreciate it more for having done so; for, after all, a photograph is an article of luxury and refinement, and can scarcely be brought under the same rules as the selling of bread and cheese.

I think your correspondent is scarcely consistent with himself when he complains of "tobacconists, confectioners, fancy shopkeepers, &c." taking up photography, and then goes on to say that he does not "know in what way photography differs so essentially from ordinary business." A photographer should be a man of artistic taste and skill, education and refinement, and be possessed of a large amount of patience and numerous other virtues. Surely these things have their market value. But if the time comes, predicted by your correspondent, when the quality of work now done for 10s. shall be done for 5s., the common working man, as far as pay is concerned, will be in a superior position. The case of the doctor does not seem to me to be a parallel: his services are absolutely necessary; those of the photographer are not so. We never hear of such men as Sims Reeves, Vernon Rigby, Santley, &c., endeavouring to raise the status of their profession by singing for the public on the lowest possible remunerative terms. Nor did Sir Joshua Reynolds, Sir Thomas Lawrence, Turner, &c., shed lustre on their art by selling their productions at a price calculated to clear the cost of paint, canvas, and wear and tear of brushes. I can quite agree as to the importance of doing everything possible to raise the quality of our work, but cannot see why, at the same time, it should be advisable to lower the prices.—I remain, yours truly, LAWRENCE ELLIS.

New Street, Wellington, Shropshire, September 12th.

## A PHOTOGRAPHER'S TOOLS.

DEAR SIR,—I am anxious, as I have had many hints from many kind friends, to do something very small in return for their kindnesses to me as a beginner and lover of the art of photography.

There is an old saying that "He is a bad workman who finds fault with his tools." As regards photography, I dispute the dictum, for who can do good work unless his studio or tent be light-tight, or unless he has a basis on



which to place his camera (I speak of out-door work), which is both firm and portable?

First and foremost, he must have first-rate legs; second, he must have a good camera (and there are lots of them); and, of course, no man in his senses would attempt to copy nature or anything else without the best lenses he could procure. But however good these latter may be, they are comparatively useless without good firm legs.

I only began photography practically a little more than two years since, but I have made a study as well as an amusement of it. I compound my own collodion and everything else, and I think I have perfected my own legs. They are very portable and light. One screw each raises or lowers them (one or all three) at will; they are so fixed at top that they can be moved anywhere bodily, without collapsing; and on the top of all is an arrangement which, once the legs have been properly levelled and firmly placed, the camera can be turned completely round without the possibility of any change of plane, so that a panorama may be taken without the least trouble, and without any danger of derangement of the relative parts of the complete circle. I have myself taken one of a half circle on five 10 by 8 plates.

My first legs were converted from a set of the ordinary triangle-topped tripod, doubling up in the middle, by a carpenter in Italy; but since I returned to England Mr. Morley, of Islington, has completed my ideas, and made me a second set, by which I can raise my camera to about seven or eight feet. My old legs do very well up to five or six feet.

I enclose you my first attempt at Rembrandtesque effect out of doors. Please accept the others. The names are on the back.—I am, dear sir, yours faithfully;

W. H. PARKYNS.

PS.—I must apologise for the very bad print I have sent you of the Countess Adiana. Lady Parkyns has given all the rest away.

Castle Bank, Reigate, September 11th.

[The effect of light and shade in the Rembrandtesque portrait taken in the open air is very satisfactory. The other prints sent are very charming.—Ed.]

## Notes and Queries.

### PHOTO-MECHANICAL PRINTING.

SIR,—“Grenatine” desires some information with regard to “mechanical printing.” He cannot do better than follow the directions that have appeared in the NEWS and YEAR-BOOK. The Rochford printing press, invented and sold by a practical maker—Francis, of Rochford—and not likely to get out of order, is the thing he should obtain. Rollers, ink, and all necessary information can be obtained from the same source.

I may also mention that if Captain Abney would appoint some agent for the sale of his litho ink that can be used on plain paper instead of the usually prepared paper, he will do good service to “art and artists.”—Yours, &c.,

OBSERVER.

### SKYLIGHTS.

DEAR SIR,—I am glad to see that you have opened a column in the NEWS for queries, as many tyros like myself may thereby acquire some benefit from the more experienced of your subscribers. There are a number of amateurs, I have no doubt, who are without a skylight to their room, and I should like to submit the following problem:—I have a room ten feet high, and lighted from two sides at right angles to each other. What are the best arrangements for portraits under the circumstances, and colour of background?—Yours most respectfully,

G. THOMPSON.

## Proceedings of Societies.

### MANCHESTER PHOTOGRAPHIC SOCIETY.

THE meetings of this society were resumed on the 10th inst., THOS. HEYWOOD, V.P., in the chair.

The minutes were read and confirmed, and Messrs. Thos. Chilton and J. T. Chapman elected members of the society.

Messrs. Wade and Payne were elected auditors for the year.

Mr. JOHN BRIER, Jun., exhibited a series of excellent prints, chiefly from wet collodion negatives. All the skies were printed from beer and albumen negatives. Mr. Brier had not found that process very reliable.

Mr. ATHERTON exhibited a number of views taken by Mr. Kershaw, of Buxton, showing the capabilities of Ross's symmetrical lenses. All the negatives had been taken on wet collodion, and some of them, Mr. Kershaw said, had been kept three and a-quarter hours before developing, by simply wrapping the slide in a damp cloth.

C. ADIX, Hon. Sec.

## Talk in the Studio.

NEW AMERICAN JOURNAL.—A new monthly journal has been commenced in Chicago which pays us the compliment to use our name, the *Western Photographic News* being the name of the new venture. It is the enterprise of Mr. C. W. Stevens, who is proprietor of a large photographic warehouse in Chicago. There is some promise of “go” in the magazine, from which we give some extracts elsewhere.

ENAMELLING PHOTOGRAPHS.—The peculiar effect of delicacy and brilliancy which characterizes a good photograph when finished by means of the collodion enamelling process has of late been generally recognized, and portraits so treated have become very popular with the public. Many photographers, as we constantly learn from the complaints of correspondents, do not succeed well in applying this enamel. A French photographer, M. Leon Favre, has recently opened an establishment in London where he undertakes this enamelling for the profession. We have examined a large number of specimens of his work in all sizes, admirably perfect in finish, without speck, blister, or defect of any kind, and possessing the most perfectly glossy polish which can be desired.

THE PHOTOGRAPHS OF THE PRINCE IMPERIAL.—The Correctional Tribunal of Paris has just been engaged in hearing a charge brought against M. Guérard, dealer in photographs, Rue de Rivoli, and M. Vallentin, photographer, Rue Méchain, on a charge of committing an infraction of Art. 22 of the decree of the 10th February, 1852. By the terms of that law no drawing, engraving, &c., can be published, exposed, or sold, without the authorisation of the Minister of the Interior. In the present case the incriminated articles were photographs of the Prince Imperial. M. Guérard had applied in due course for permission to introduce into France 300,000 chromo-lithographic portraits of the Prince, which were to be executed in Belgium; and of those he had received a hundred and fifty thousand. Those had been distributed in the provinces, and had given rise to the question addressed by M. Ernest Picard to the Government at the late sitting of the Committee of Permanence. But others, although unauthorised, had also been distributed, and the police, after some search, had discovered that they came from the defendants. At the moment the commissary entered the premises of M. Vallentin he was found pasting photographic copies of the portraits on cards. In his defence he said he was not aware that he was doing wrong; he had received an order from M. Guérard, who admitted the fact, and declared he was supplying them to M. Haentjens, who asserted that they were duly authorised, and he produced a letter from that gentleman, affirming that the Marshal President had himself given permission for a hundred thousand of those photographs. The advocate of the defendants declared that the object of the law was to prohibit portraits which bore emblems in such a manner as to indicate a pretender, but those in question had none, as the Prince did not set himself up as a pretender, and had no occasion to do so. The court found the accused guilty, and sentenced M. Guérard to a fine of 500*fr.*, and M. Vallentin to one of 100*fr.*, and further ordered the confiscation of the proofs and negatives.

A LUBRICATOR.—By S. V. Allen.—To photographers using a burnisher I can recommend the following lubricator, which I have found all that can be desired:—Take four ounces alcohol, four ounces ether; mix in a twenty ounce bottle. With a sharp knife scrape up fine two slightly rounded teaspoonfuls of French soap; put the soap into the bottle containing your alcohol and ether, and give the same a



vigorous shaking. After sufficient agitating, add to the whole eight ounces of plain (uniodized) collodion; again shake thoroughly, and your lubricator is ready. To use, when your photographs are dry, take a very fine and very clean sponge, and apply the lubricator; apply to the whole surface of your picture. It will dry in a few moments, and they are ready for the burnisher."

## To Correspondents.

ALPHA.—There will be no medals or prizes at the forthcoming exhibition, except those offered by Mr. Crawshaw for specific competition. See article on another page on the subject.

ONE IN A FIX is not quite sufficiently explicit in describing his troubles. A "white kind of deposit on the collodion film" is a somewhat indefinite account of a difficulty. This deposit may be fog from various causes, or it may be the matt silver, which assumes the form of slug-tracks and oyster-shells. We are disposed to think that, in this case, it is probably the latter. In either case it may arise from many causes; but the most common cause of the matt silver stains is the use of a horny, repellent collodion in too new a condition. Age in the collodion will remove it; or adding a little old to the new will be found beneficial. Great care in frequently washing the inner frames of the camera may aid in avoiding the difficulty, and always allowing the plate to rest on clean pieces of blotting-paper in the dark slide will aid you. 2. Crapiness in the collodion also frequently results from the collodion being somewhat thick and glutinous in texture, and sometimes from too much water in the alcohol used in making it. Crapiness is often the result, also, of unskillful manipulation. Care is required with some collodions, in coating the plate, to do it somewhat quickly, and keep rocking it to prevent the collodion film from forming into crapy ridges. 3. If a negative be over-exposed it will be full of detail, but flat and wanting in contrast. In such case the best plan is to intensify after fixing, and use rather more than less silver than usual with the pyro solution.

S. W. O.—Your work is exceedingly creditable to you. The medal-bust is the best of the three sent. The other two have excellent qualities, and are really very brilliant and fine, but are just a trace over-intensified, so as to leave the face with a trifle less softness and modelling than might be desirable. The printing is unusually good. So far as we can see, there is no need to increase the height at the eaves; there is a positive advantage in having the eaves low, inasmuch as when the eaves are high the junction of the side and skylight makes a break in the light just at a point where it is coming in the direction of the head of the sitter. There is no special advantage, for ordinary card work, in a wider room, except, sometimes, the convenience of working.

J. S. CLARKE asks how he is to obtain "that virgin-like whiteness which is sometimes seen on vignette portraits." We are a little puzzled as to his meaning. Perfect purity in whites should be attained in all prints if the operations are properly conducted. Any lack of such purity may be due to two or three causes, such as want of density in the whites of the negative, keeping the sensitive paper too long before toning and fixing, exposing it to light too much during the various manipulations, or the use of old or acid hypo. If our correspondent had sent an example of the imperfect purity of which he complains we might have given him more specific information.

G. THOMPSON.—We print your query in "Notes and Queries," as you wish. In relation to the best mode of producing portraits in a room lighted by two windows at right angles to each other, you have omitted an important detail in the matter: you do not state the size of the windows. You will probably find the best plan as follows:—If one window face the north, place the sitter one or two feet behind it, and two or three feet from it, facing a little towards it. If the other window be very near, it may require the blind partially or wholly pulling down; if at some distance, it will give a soft light to the shadowed side of the face without a blind. A grey background of medium tint. Print No. 1 is under-exposed, and produced in a bad light; No. 2 is produced in a bad light, lacks vigour, and seems a little fogged. It is not quite sharp, either from imperfect focus or movement in the sitter. No. 3 is best; but it might be lighted so as to give more relief and solidity.

C. ANTHONY.—We regret that we have not the address in question. HALSTED BROOK.—The possession of a copyright in a photograph secures to you the sole right to sell and publish copies. You can secure the copyright in any photograph you produce for your own purpose by having it registered at Stationers' Hall. Any photograph you produce to the order of a customer will require a written transfer or agreement with the customer to secure the copyright to you.

BOB.—We have published several descriptions of the solar camera in back volumes. You will find one on page 102 of our eighth volume. Unless you are skilful in such work you will find it wiser to buy than to attempt to make.

C. FERRANTI.—We are not in a position to speak authoritatively, and we do not know the extent to which the pictures in question are worked upon, having only seen two or three examples once for a few moments; but if they are, as Mr. Ferranti states, only spotted and glazed, they will undoubtedly be eligible for competition. The same conditions which were before announced will again obtain. There will be no ban upon a slight and legitimate amount of retouching, the judgment of the jury, we understand, being based upon the whole of the conditions and the sum of the results.

J. G. FULLER.—We are glad to hear of your restored health and sight. Thanks for the examples of your work, which are very interesting. We shall have pleasure in receiving a detailed article on the subject.

Several Correspondents in our next.

\* \* \* A little delay in some cases may occur in answering questions, owing to the Editor's absence from town for two or three weeks.

## METEOROLOGICAL REPORT FOR AUGUST.

BY WILLIAM HENRY WATSON.

Observations taken at Braystones, near Whitehaven, 36 feet above sea level.

Date.	THERMOMETER.			THERMOMETER.			Direction of Wind at 9 a.m.	
	Morning.	Noon.	Night.	Morning.	Noon.	Night.		
1	62	62	62	116	29.89	29.79	S.	Fair and sunny
2	64	66	60	—	29.56	29.57	S.S.W.	Rain morning and evening. Strong wind at night
3	60	60	59	118	29.73	29.80	W.S.W.	A little rain this morning. Sunny
4	57	57	56	—	29.50	29.52	—	Rain till about 1.30 p.m. Sunny afternoon
5	56	56	54.5	—	29.58	29.52	S.	Rain a.m. and p.m. Quite a gale at night.
6	57.5	59	58	101	29.70	29.74	N.	Fair and sunny. Windy
7	60	63	60	—	29.45	29.45	W.S.W.	Rain a.m. Sunny p.m.
8	58	59	57	—	29.43	29.45	S.	Fair during the day. Cloudy.
9	56	60	56	99	29.61	29.62	N.N.W.	Heavy showers at night. Rain early this morning and evening
10	60	—	57	—	29.40	—	S.	Rain morning and evening. Sunny afternoon
11	58	58	57	—	29.35	29.41	S.W.	Rain a.m. and p.m. Shower of hail a.m.
12	53	59	58	—	29.43	29.48	W.S.W.	Rain a.m. Clear p.m.
13	53	59	58	—	29.32	29.20	E.S.E.	Rain all day. Sheet lightning at night. Frequent
14	57	54	57	—	29.29	29.30	S.E.	Rain a.m. and p.m. Strong wind at night
15	54	56	—	—	29.73	29.71	S.W.	Rain a.m. and p.m.
16	56	62	58	98.5	29.80	29.81	S.W.	Fair and clear
17	56	61	56	—	29.98	30.00	S.S.E.	Fair, but cloudy
18	60	63	62	—	29.98	30.03	—	Fair, but cloudy
19	62	—	61	119	30.22	—	W.	Fair and sunny
20	62	68	64	112	30.30	30.30	—	Fair and sunny
21	61	69	64	110	29.43	—	N.N.W.	Fair and sunny
22	62	69	58	117	30.37	30.31	S.W.	Fair. Rather hazy. Thunder this afternoon
23	62	66	63	117	30.27	30.25	S.	Fair and sunny. Hazy
24	63	67	59	116	30.22	30.15	S.	Fair and sunny. Hazy
25	62	69	60	118	29.93	29.91	—	Fair and sunny. Hazy
26	64	66	63	—	29.92	29.90	S.S.E.	Fair. Rather hazy
27	62	64	60	—	29.60	29.52	S.	Rain until about 7 p.m.
28	58	62	56	—	29.68	—	N.W.	Rain p.m.
29	52	59	56	113	29.47	29.50	S.W.	Rain a.m. & p.m. Thunder p.m.
30	58	62	52	—	29.62	29.50	—	Rain from 3 p.m. Hazy a.m.
31	58	63	58	—	29.45	29.53	S.	Fair all day. Hazy

From the above data I arrive at the following:—

	Mornings.	Noons.	Nights.
Maximum temperature	64°	69°	64°
Minimum ditto	52	54	52
Mean ditto	58.9	62	58.6
Mean ditto of whole	59.8	—	—
Maximum temperature in sun	—	119	—
Minimum ditto	—	98.5	—
Mean ditto	—	111.2	—
Number of days on which rain fell	—	—	17
Number of days on which no rain fell	—	—	14
Number of fair days on which it was sunny	—	—	8
Number of fair days on which it was gloomy	—	—	6

MIGRATION OF SWALLOWS.—Whilst standing by the edge of a pond here, on the evening of the 21st, I observed a number of swallows—I should say at least a hundred—congregated together, and flying round and round. I have only seen one or two since, so that it seems that they have been preparing for their departure to some warmer climate. This usually, however, takes place near the end of September. How is it they are leaving us so soon this year?

Wind S. and S.W. prevailed.

Braystones, September 2nd.



## The Photographic News, September 25, 1874.

## PHOTOGRAPHY IN AND OUT OF THE STUDIO.

A FEAT IN PHOTO-MECHANICAL PRINTING—TRANSIT OF VENUS: THE DEPARTURE OF THE LAST PARTY OF OBSERVERS.

*A Feat in Photo-Mechanical Printing.*—A striking example of the aid that photography may lend to the contemporary press is afforded in a recent number of the *New York Daily Graphic*. The daily issue of a large illustrated journal such as this, the pages of which are bigger, while they are quite as numerous, as those of the best illustrated weekly papers in this country, is of itself an object for wonder, and the nature of the cuts and engravings produced is generally of a high-class nature. Indeed, at first sight it is difficult to conceive how such a paper can possibly be produced at all, for the number of artists and engravers engaged on a publication of the kind would be exceedingly large, while the expenses thereof must be unusually heavy. The key to the problem is, however, soon found, for, on examination of the front page, we see on each side of the title a little engraving: one of a printing press, the other of a camera. The truth is, that the *Daily Graphic* has constant recourse to photography in the production of its illustrations, and does not, probably, engage half the number of draughtsmen and engravers which such a paper would have required ten years ago. Photography is employed both for securing sketches on wood direct from nature, as also for reproducing line sketches and drawings in photo-type. Sometimes, therefore, it takes the place of the draughtsman, sometimes that of the wood engraver. But the particular example, or feat of reproduction, it may be called, to which we particularly wish to draw attention, is a specimen of photolithographic work of unequalled excellence. The only pity is, that the labour was not expended upon a more deserving subject. The Beecher-Tilton scandal, with which New York has resounded for the past month or two, is placed fully before the public in the shape of fifty-one long columns of correspondence, consisting of all the letters that have passed between the parties interested, reproduced most sharply and clearly from the originals by means of photolithography. The series of letters have been slightly reduced by means of the camera before being transferred to stone, and this diminution in size gives the whole mass of writing a neatness and uniformity which it would not otherwise possess. At the end of the journal is the same matter in type; but one can well understand that those who feel any interest in the matter at all would much prefer reading the letters as they stand, for there is sometimes as much to be gathered from a person's handwriting as from the purport of his note. The reader may here study the neat, legible calligraphy of Mrs. Tilton, as also the vigorous, though somewhat scrawly, handwriting of Mr. Beecher, and the rapid hand of Mr. Tilton. But it is our province merely to record the high degree of excellence with which the half hundred columns of MS. has been reproduced, and the clean, sharply-defined character of the *fac simile*, which amply prove how very much can be done by photography if one has only the patience and perseverance to work out some of the many ingenious processes that have been made public. It is singular that in this country, where so many clever mechanical methods have originated, photo-engraving, or phototype printing, is comparatively unknown.

*Transit of Venus: Departure of the last Party of Observers.*—The last party to be sent out to observe the transit of Venus will leave London next week for Alexandria, with Captain Abney, R.E., in charge of the photographic work. Most probably, two or three stations in Egypt will be fixed upon, and Captain Abney will be in command of one of them, and superintend the spectro-

scopic, as well as the photographic, observations. With him go Captain Browne, late of the Royal Artillery, and several other gentlemen, besides a party of Sappers who are to act as photographic assistants. One of the chief points attended to in making preparations has been the drilling of those to be employed in the photographic operations, so that a clear idea may prevail as to the work to be done at the eventful moment; and the reason for starting so early for the different stations is, that sufficient time may be at hand to continue this drill for some weeks before the services of the staff are to be put into requisition. By adopting this system of discipline, it is anticipated that much more advantage will be taken of the time at the disposal of the observers, and that double the number of pictures will be taken by thus having a well planned division of labour, and a method of operating in which all the employes have been thoroughly drilled. It is Captain Abney who has organised this drill and systematic plan of operating. All the Sappers from the corps of Royal Engineers who have been detailed to assist in the English expeditions scattered over the globe have been personally instructed by him. Each photographer-in-chief has three of these drilled assistants, and we may expect, therefore, a goodly number of pictures from each station if only favourable weather prevails. Lord Lindsay's party sailed in his lordship's private yacht, which was expressly fitted for the purpose, the observers and assistants numbering thirteen in all. Although somewhat small for the long journey to be made, the vessel is in every other respect well adapted to the purpose, and the hospitable owner has taken good care to provision his ship abundantly for the eight months' enterprise. The Germans have been very active in the matter of observing the December phenomenon. In July last a German expedition set out for Kerguelen's Land, south-east of the Cape of Good Hope, where we, also, have a party of observers; and in the same month another body—among whom was Dr. Krone, the president of the Dresden Photographic Society—departed for the Auckland Islands. In the middle of August a third party left Berlin for China, travelling by Southampton, Alexandria, Ceylon, and Singapore, to Tschifu. Dr. Vogel, of Berlin, was to have taken charge of the photographic work in this case, but pressing engagements kept him at home at the last moment. A fourth expedition will set out at the end of this month, whose destination is Persia, and this party is accompanied by Dr. Stolze, of Berlin, who was editor of the now extinct *Light*, and president of the Photographic Society of Berlin. This last-named body will travel overland by way of Tiflis. All our own expeditions, with the exception of those destined for Egypt, have left some time ago.

## HOW TO AVOID UNNECESSARY WASTE OF TIME AND SILVER.

BY E. Z. WEBSTER.\*

THE developings and first washings of the negative are rich in silver, most of which can be saved by using proper means and care. The plan recommended in Anderson's "Skylight and Darkroom" is about the best, but some simpler method will answer very well. Any large vessel into which you can run the developings and first washings, where they can remain undisturbed long enough to settle, will answer the purpose. The iron in the developer is sufficient to precipitate all the silver held in solution, but it settles slowly. When the vessel is full, let it stand a day or two, and then decant what you can; filter the remaining liquid through a cloth or paper filter. Another, and perhaps the least troublesome plan, is to make a long conical-shaped bag of cotton cloth or some similar material, which can be suspended in a barrel by

\* Concluded from page 447.



tacking the open or large end of the bag around the upper end of the barrel, allowing the small end of the bag to reach nearly or quite to the bottom of the barrel (of course the barrel is supposed to stand on one end and the upper head is removed). The waste pipe should be inserted well up toward the top of the barrel; now let your developings and first plate washings run into the bag, which will act as a filter, and save all the silver, and when you have obtained sufficient precipitate to make it pay, you can reconvert it to a workable condition by simply submitting the precipitate to the action of muriatic acid, which will dissolve out the ferro-sulphate, and leave a residuum, which is pure silver, requiring only to be thoroughly washed and then dissolved in diluted nitric acid; the acid may be driven off by evaporation, or neutralized, when the silver solution becomes ready for use.

In fixing the negative some operators prefer to use cyanide of potassium, but hyposulphite of soda is most generally used; in either case a shallow dish or tray large enough to lay a number of negatives in face up, with solution enough to well cover the same, is the most convenient and economical. By fixing in this manner the solution becomes rich in silver, all of which can be recovered by the galvanic process; but if you do not like to fuss with a battery, and are in no hurry, you can immerse a piece of copper or a copper plate in the hypo or cyanide solution, three or four inches square, and let it remain; the pure metallic silver will be deposited upon the surface of the plate, and when desirable to do so you can scale off the silver, and reduce it with nitric acid, evaporate, or neutralize, and the silver solution is ready for use.

Of course I am aware that there are several other ways of recovering silver from the solutions above mentioned, but the plan here recommended is the most easily managed by the majority of operators. The chlorides, carbonates, &c., are also easily managed; but the sulphurets, &c., require brains and other conveniences which I do not propose to furnish. A great deal of silver might be retained in a workable condition by using a little forethought. For instance, suppose you obtain a large open-mouth bottle, or other suitable vessel, and place it in some convenient spot. Now, when you rinse out your negative bath-holder, pour the first rinsings into the bottle, and when you have done with a filter, just drop it, while wet, into the same bottle; do the same with blotting-papers, sponges, and, in fact, everything which becomes saturated with the negative solution. By constant additions the contents of the bottle gain volume and strength, and an occasional stirring will reduce the whole to a pulpy mass, which should be strained, and squeezed as dry as possible, and then the weak solution thus obtained can be strengthened with new silver, or by boiling down, and is ready for use either to renew an old or make a new bath.

By making the contents of the slop-bottle tolerably strong of nitric acid, the silver contained in old dry filters, clippings, &c., can be reduced and utilized.

The advantage of some simple plan of avoiding waste must be obvious to any one who will stop to think of the foolishness of "going around Robin Hood's barn" to save a mere fraction of the silver which he has made into a conglomeration which could be avoided with less trouble.

#### ON THE PHOTOGRAPHIC TRANSPARENCY OF VARIOUS BODIES, AND ON THE PHOTOGRAPHIC EFFECTS OF METALLIC AND OTHER SPECTRA OBTAINED BY MEANS OF THE ELECTRIC SPARK.

BY W. A. MILLER, M.D., LL.D.\*

8. The following table contains a list of the various substances subjected to experiment. All these bodies allowed the less refrangible rays to pass, but cut off the rays of

medium and extreme refrangibility wherever absorption occurred at all:—

TABLE I.—*Diactinic Power of Solids.*

Name of substance.	Thickness, in inches.	Termination of spectrum.	Relative lengths of spectra.	Remarks.
Ice ... ..	about 0.5	170.5	74.1	
Diamond* (1) ...	0.032	155.5	59.0	
Diamond (m) ...	0.017	159.5	62.0	
Diamond (A) ...	0.182	115.5	19.0	
Sapphire (24) ...	0.13	116.0	19.5	
Sapphire (B) ...	0.093	112.0	15.5	Faint bluish tinge.
Sapphire (n) ...	0.12	111.0	14.5	
Quartz ... ..	0.16	170.5	74.0	With quartz train.
White topaz ...	0.19	162.0	65.5	Faint image of spectrum.
Mica ... ..	0.007	114.5	18.0	
Oil of vitriol ...	0.75	160.5	61.0	
Sulph. lime (solid) ...	about 0.3	155.5	59.0	
Sulph. baryta ...	about 0.4	151.5	58.0	
Sulph. magnes. ...	0.34	158.0	61.5	
Sulph. potash ...	Sat. sol. 0.75 in.	159.5	63.0	
Sulphate soda ...	"	159.5	63.0	
Sulph. ammonia ...	"	145.5	49.0	
Sulphate zinc ...	"	152.5	56.0	
Alum ... ..	"	159.5	63.0	
Sulphate iron ...	"	105.0	8.5	Pale green.
Sulph. manganese ...	"	144.5	48.0	Faint pink.
Sulphate copper ...	"	112.5	16.0	Full blue.
Sulphite soda ...	"	127.5	31.0	
Hyposulphite soda ...	"	108.5	12.0	
Fluor-spar ...	0.17	170.5	74.0	
Fluoride sodium ...	Sat. sol. 0.75 in.	159.5	63.0	
Fluoride ammo. ...	"	166.5	70.0	
Hydro. acid s.g. 1.1 ...	0.75 in.	152.5	56.0	
Rock-salt (solid) ...	0.75	159.5	63.0	
Chloride potas. ...	Sat. sol. 0.75 in.	159.5	63.0	
Chloride ammo. ...	"	155.0	58.5	
Chloride barium ...	"	133.0	56.5	
Chlor. strontium ...	"	152.0	55.5	
Chloride calcium ...	"	147.0	50.5	
Chloride zinc ...	"	145.5	49.0	
Chlor. manganese ...	"	104.5	8.0	Faint rose colour.
Chlor. tin (SnCl) ...	"	108.5	12.0	Spectrum cut off abruptly
Chlor. tin (SnCl <sub>2</sub> ) ...	Strong solution.	114.5	18.0	Spectrum cut off abruptly
Ch. Arsenic (AsCl <sub>3</sub> ) ...	Liquid.	101.5	5.0	Spectrum cut off abruptly
Corrosive sub. ...	Sat. sol. 0.75 in.	128.5	32.0	Spectrum cut off abruptly
Bromide sodium ...	"	144.5	48.0	
Bromide potas. ...	"	144.5	48.0	
Iodide sodium ...	"	114.5	18.0	Spectra terminate
Iodide potassium ...	"	114.5	18.0	abruptly
Cyanide potas. ...	"	105.5	9.0	{ Prepared by Liebig's
Cyanide mercury ...	"	145.5	49.0	process.
Sulpho. potas. ...	"	112.5	16.0	Slightly yellowish.
Hydrate soda ...	"	131.5	35.0	From sulphate by precipi-
Hydrate potash ...	"	129.5	33.0	tation with baryta.
Hydrate ammonia ...	Sp. gr. 0.945	170.5	74.0	Rather feeble spectrum
Hydrate baryta ...	Sat. sol. 0.75 in.	158.0	61.5	
Hydrate strontia ...	"	150.0	53.5	
Hydrate alumina ...	Strength of sol.	146.0	49.5	Cruin's solution.
Hydrate silica ...	(not determind)	152.0	55.5	Dialysed from hydro-
Carbonate soda ...	Sat. sol. 0.75 in.	146.0	49.5	chloric solution.
Carbonate potash ...	"	146.0	49.5	From ignited bicarb.
Iceland spar ...	0.35	160.0	63.5	
Bicarb. soda ...	Sat. sol. 0.75 in.	145.0	48.5	
Bicarb. potash ...	"	112.0	45.5	
Sesquicarb. ammo. ...	"	152.0	55.5	
Boric acid ...	"	143.0	46.5	Faint beyond 109
Borax ... ..	"	158.5	62.0	
Phosphoric acid ...	"	117.5	21.0	
Phosphate soda ...	{ Sol. of 60 gr. of dried salt in 1 oz. of water.	156.5	60.0	Equal weights of same salt; one dried at 330° F., the other ignited.
Pyrophos. soda ...	"	156.5	60.0	
Triarsenate soda ...	Sat. sol. 0.75 in.	127.5	31.0	
(3NaO, AsO <sub>3</sub> ) ...	"	119.5	23.0	
Arsenic acid ...	"	145.5	49.0	
Chlorate potash ...	"	106.5	10.0	Colourless.
Nitric acid ...	Sp. gr. 1.3	112.5	16.0	All the spectra of the
Nitrate soda ...	Sat. sol. 0.75 in.	112.5	16.0	nitrites are cut off
Nitrate potash ...	"	112.5	16.0	sharply.
Nitrate ammonia ...	"	112.5	16.0	
Nitrate lime ...	"	112.5	16.0	
Nitrate magnesia ...	"	112.5	16.0	

\* I am indebted to my friend Professor W. H. Miller, of Cambridge, for the opportunity of examining the diamonds and sapphires alluded to above. / was a slice of diamond bounded by cleavage planes from the Warburton collection. m a somewhat thinner slice from the same collection. A large octahedral diamond from the Homan collection. All these were colourless. The sapphire 24 was a large six-sided prism from the Brooke collection; that marked B was a smaller prism of a faint bluish tinge from Professor Miller's own collection. n is a colourless crystal of sapphire from the Warburton collection. I made an application to the trustees of the British Museum for permission to use some of the limpid specimens in their collection, but was informed that, even for such a purpose, the Act of Parliament forbids them to allow any mineral to pass off their premises. Mr. Maskelyne was kind enough to lend me a fine colourless topaz from his own collection.



TABLE I.—(continued).

Name of substance.	Thickness, in inches.	Termination of spectrum.	Relative lengths of spectra.	Remarks.
Nitrate baryta ...	Sat. sol. 0.75 in.	111.5	15.0	Intense green solution.
Nitrate strontia ...	"	111.5	15.0	
Nitrate nickel ...	"	absd.	0.0	
Nitrate lead ...	"	111.5	15.0	
Subnit. mercury ...	"	111.5	15.0	Spectrum ends abruptly.
Nitrate silver ...	"	106.0	9.5	
Acetic acid ...	Glacial, liquefied	112.5	15.0	
Acetate soda ...	Sat. sol. 0.75 in.	144.5	48.0	
Acetate potash ...	"	113.5	17.0?	{ Very faint brownish tinge in liquid.
Acetate ammonia ...	"	144.5	48.0	
Acetate baryta ...	"	115.5	19.0?	
Acetate lime ...	"	115.5	19.0?	
Acetate lead ...	"	130.5	34.0	Slightly opalescent.
Tartaric acid ...	"	127.5	31.0	
Tartrate soda ...	"	144.5	48.0	
Tartrate potash ...	"	144.5	48.0	
Roch. salt (NaO, KO, CsH <sub>2</sub> O <sub>10</sub> ) ...	"	144.5	48.0	Pale yellow.
Tart. emetic (KO, SbO <sub>2</sub> C <sub>8</sub> H <sub>4</sub> O <sub>10</sub> ) ...	"	131.5	35.0	
Citric acid ...	"	133.5	37.0	
Oxalic acid ...	"	114.5	18.0	
Oxalate potash ...	"	117.5	21.0	Greenish.
Oxalate ammonia ...	"	124.5	27.0	
Sugar-candy ...	{ 60 gr. in 200 }	156.5	60.0	
Milk sugar ...	{ gr. of water. }	151.5	55.0	
Gum arabic ...	Mucilage.	113.5	16.0	Slightly opalescent.
Silicate soda ...	Sat. sol. 0.75 in.	108.5	12.0	
Faraday's op. gls. ...	0.54	101.5	5.0	
Flint glass ...	0.68	105.5	9.0	
Window sht. glass ...	0.07	112.5	16.0	Slightly opalescent.
Hard Bohemian ...	0.18	114.5	18.0	
Plate glass ...	0.22	111.5	15.0	
Crown glass ...	0.74	106.5	10.0	
Thin gls. formicros.	0.009	116.5	20.0	

The photographic impression of each spectrum, in every case quoted in this table, commences at 96.5, and the number inserted in the table in the second column of figures indicates the point at which the most refrangible rays transmitted by the compound under examination ceased. The numbers in the third column of figures represent the length of the spectrum, the unit of the scale being one millimetre.

9. In the majority of cases of saline compounds in the foregoing table, the results given are those obtained by forming a saturated solution of the compound in distilled water, and decanting the liquid after it had become clear by standing. It is not advisable to filter in these cases, as the introduction of minute quantities of certain compounds—especially of some of organic origin—greatly impairs the transparency of the liquid to the rays which produce chemical action.

The solution, duly prepared, was then placed in a small trough made by cutting a notch in a piece of plate glass three-quarters of an inch in thickness, the sides of the trough being completed by thin plates of polished quartz, which were pressed by means of bands of caoutchouc against the ground surfaces of the plate glass. No cement was employed, and the trough was taken to pieces and cleansed between each experiment, a stratum of liquid 0.75 inch thick being used in each case.

10. In the preparation of the various compounds for examination much care was taken to employ the materials in a state of purity. In one or two instances, however, it has happened that an acid which usually forms highly diastinct salts has exhibited an anomalous and excessive absorptive power, although in combination with a base which, in other instances, furnishes strongly diastinct salts. Here some impurity, in quantity so small as to escape the tests in ordinary use, but sensitive to the action of light, has probably been present, and has impaired the diastinct capacity of the substance. Cases in which such impurity is suspected are indicated in the table by the mark (?) subjoined to them.

It may here be observed that the solution of a salt in water always to a certain extent impairs the diastinct quality of the liquid, however limpid the solution may be,

producing an effect which may be compared to opalescence or turbidity in a liquid employed in the transmission of luminous rays.

(To be continued.)

## THE PRACTICAL PRINTER IN AMERICA IX.

### PRINTING-FRAMES, ETC.

In the matter of printing-frames, American photographers are ingeniously practical, and several forms in use there are unknown in this country. Mr. Hearn confines himself to a description of those he has found best.

*The Printing-Frames.*—For the purpose of printing from the negatives upon the sensitive paper, printing-frames are constructed. The sizes of these printing-frames vary according to the size of the negatives. The imperial and the common card negatives are generally made upon 5 by 8 glass; then the printing-frames intended for this size glass should have this dimension on the bed of the frame. The whole-size negatives should be made on either the 6½ by 8½, 7 by 9, or even the 8 by 10 size glass, and for the printing of them a larger frame is, of course, necessary, which should have (as in the case of the smaller frame) a bed of the same dimensions as the different size negatives. Besides the bed printing-frame there is also another kind of frame used, which is called the flat printing-frame.

It is absolutely necessary that the printing-frames should be made of some well-seasoned hard wood, as they are exposed in all climates and temperatures. The depth of the bed printing-frames depends on the particular use that the frame is to be put to. For instance, a certain kind of frames are made for printing plain or medallion prints, and another kind for printing vignettes.

"Now, in the latter case, it is essential that the frame should be made deeper than in the former, because, in printing vignettes, greater softness is thereby given to the prints if there is considerable space between the negative and the vignetting card frame.

"You ask, Why not make all of the frames deep, as they will be much more handy? Because that depth of the frames will cast a shadow over the impressions on the negatives if the rays of the sun strike them obliquely, and thus ruin the prints; but this may be remedied, and the frames all made quite deep, by placing them when printing up to the sunlight. This is not always advisable, however.

"In speaking of deep (raised) printing-frames, I refer more to small ones, as 5 by 8, 6½ by 8½, &c. rather than to the largest sizes, viz., 11 by 14, 14 by 18, &c.; for in the case of the common card and the so-called cabinet, we can obtain by far better vignettes by printing them by means of common cardboard of a suitable size and shape, opening and raised printing-frames, than we can with the wooden block; while, with the larger sizes, I prefer the nicely made vignette-frames. However, more of this will be written of hereafter.

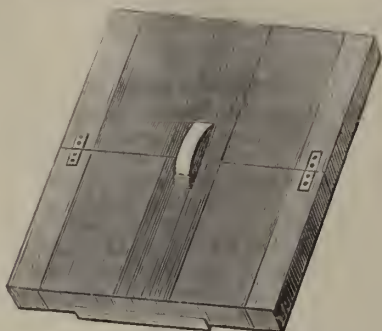
"The backboards of the frames should also be made of well-seasoned wood, and the springs, which should be attached to them, should be made of good spring brass, and so arranged to them that they will give an even and gentle pressure to the negative when it is placed in the frame, and the backboard fastened in.

"The springs meet the backboard of the smaller frames in one place, which is generally the centre of the frame; but in the large frames they meet the backboard in two places, and, for convenience, are not attached to the backboard, but to the frame itself, swinging back and forth at will by means of the hinges.

"The backboard should have soft pieces of cotton flannel glued to it, napped side out, on that side, of course, which is to be placed nearest to the negative. This give a soft cushion to the backboard, which is a desirable thing. As



a general thing, loose pads are placed in the frame on to the sensitive paper, but there is no absolute necessity for this if there is one or more good pieces glued to the back-board. The printing-frames thus far described have consisted of two parts, the frame and the backboard; but there is another very good frame (see fig.), which



is very popular among printers on account of its convenience when printing the crescent line on the medallion prints, as well as for various other uses. Its construction is very simple, consisting of a flat piece of some hard wood, the width of which is cut into two pieces in such a way as to have one piece one-third larger than the other. The separate pieces are now joined together by means of a couple of small hinges.

"A button is fastened to the smaller of the two pieces. This button should be large enough to keep the two pieces together when it is buttoned. This arrangement will permit of the larger of the two pieces being lowered or not, according to the desire of the printer. The reason of this will at once be obvious.

"On the front part of the board, and at the lower part of it, two or three pieces of woollen cloth should be tacked, which will give the paper, when laid upon it, a soft, yet sufficiently hard cushion for the purpose required.

"The negatives are kept in place on these boards, if printing is to be done, by means of some spring brass with wooden feet, each foot (two in number) being made of a piece of wood two inches long, one-third of an inch wide, and about one-half of an inch thick.

"These feet are fastened to one end of each spring by means of some screws; they are so fastened that they will move or not, at the option of the printer. The other end of these springs is fastened to the lower corners of the board.

"The wooden feet are used for the purpose of keeping the pasteboard (attached to the vignette blocks) close on to the negative, as well as to have the broad surface of the wood on to the negative rather than the brass itself, as the latter is very dangerous to the safety of the negatives.

"Never use the common iron springs in vignetting, as they are very likely to slip and break the negatives.

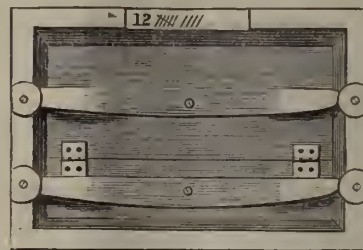
"*Keeping Tally.*—There are various methods adopted for the purpose of keeping account of the number of prints obtained from the negatives.

"One of the best ways to keep tally that I have ever seen or used I will here give. It is both simple and convenient, and there is no need of any mistake whatever if the printer is attending to his business.

"There are many disadvantages connected with the other devices of keeping tally, and the greater part of these are the liability of mistakes occurring in one way or the other, and the inconvenient manner of keeping the tally.

"The materials used for this purpose are a soft lead-pencil and some strips of common erasable tablet. A part of the main printing-frame is cut away for this purpose, and that part should be the back part of the frame, so that, in taking a print off, the printer will be reminded to make a mark or tally for it, his attention having been

attracted by seeing the tablet. The necessity for cutting away a part of the frame is because the surface of this



Keeping Tally.

tablet should be below the level of the top of the board, for then it will not be rubbed and scraped by contact with other boards, and thus, in a very short time, ruin the tablet, which it would do if precautions were not taken to the contrary. This tablet can be glued to the board, or tacked with one-ounce tacks.

"It will be seen by a glance at the cut that *ten* prints have been printed from the negative in the printing frame, and when two more are printed the order will be done. When this negative is finished the marks on the tablet can be erased with a damp rag, and the negative placed away. Another negative is placed in the frame, the number of prints wanted are placed at the left of the tablet, and then this negative is ready to be printed, and the tally kept as before.

(To be continued.)

## PHOTOGRAPHY AT THE ROYAL CORNWALL POLYTECHNIC EXHIBITION.

### JUDGES' REPORT.

The following is the report on the photography at the last exhibition, the judges being Messrs. T. Hart, J. F. Benson, W. Naylor Carne, and J. F. Trull.

**SECTION I.—Professional.**—In this section the number of exhibits is very fair, and we notice with pleasure several new names, amongst whom are Mr. G. Cooper, of Hull, and Mr. F. Hudson, of the Isle of Wight. To the latter the judges have awarded a second silver medal for landscape, "Bonchureh Valley," No. 572. It is a very fine photograph, full of atmospheric effect, combined with soft gradations of light and shade. A second silver medal is also awarded to No. 564, "Bits in Devon," by Mr. W. G. A. Grant. It may here be favourably remarked that the softness displayed in these landscapes is seldom met with in the dry-plate process.

Messrs. Alfred and John Bool are awarded a first bronze medal for the charming "Ruins of Waverley Abbey," No. 577.

A second bronze medal is awarded for the beautiful landscape by N. King, No. 558.

For untouched enlargements, a first bronze medal is awarded to a charming head and bust of a lady, by Netterville Briggs (No. 609), the artistic pose of which, combined with the life-like expression, could not be surpassed.

In portraiture, the first silver medal is awarded to Mr. George Cooper, of Hull, for the beautiful portrait of a gentleman (No. 620), highly commended for its lighting, pose, and brilliancy of tone. The judges are much pleased with his grand display of pictures, and hope to meet with his name another year.

The first bronze medal is awarded to the "Painter's Studio," by H. Garrett Coeking (No. 611).

The vignetted cretaceous pictures are highly commended for their softness, and beauty in the manipulation.

"Oxen," by David Hedges (No. 565), is highly commended for sharpness and detail.

**SECTION II.—Amateur.**—In this section the judges have



awarded a second bronze medal to "A Study from Life," by Cecil Wray (No. 654).

Some successful transparencies on glass, by C. A. Ferneley, are highly commended for their brilliancy of manipulation.

## PHOTOGRAPHS.

BY CARL PRETZEL.

[THE fun of the following example of the imperfect English pronunciation of a German will probably strike English readers less than it does Americans, amongst whom a large portion of the inhabitants consist of German immigrants.]

Photographically shpeakin, der art of dookin pictures vas a complimented cases; but der more vat you lif der longer you fiud it out. Dhere ish no doubt of a possibillidy dot if der invention vas diskofered B.C., we might hafe had a goot picture of Adam and Efe, und a picture of Cain in der attitoot of shlewin his brodder Abel. Vat a beautifull ting dot would hafe been, to have handed ub to our children. How like der dence it would oberate on der minds of der youth of to-day, und would teach em nefer to shlew dheir brodders, efen in fun. But der minds of dose days couldnd been developed yoost yet, or dhey might have seen how easy dot vas, for to sot shtill a couple minnoots, und look shteady at a shmall piece of paper, while a feller vas lookin a shmall box through at you. Dose minds vas pooty dull, und in dose days when old Humm vas chasing dot abble peddler ofer der economized shtreets, shtealiu his fruits, he couldnd afford to shtop und dook in, on his mind, dot which would gif some reflections back.

How much would mudder Efe hate gifen to had a picture of leedle Abel, after he got shlewed. Vell, I baed you she would yoost gif more as a teu toller greenbacks.

Efeu myself would like to hafe a photograph of my fore-fadder Efe, vedder it was "full-length" or "bust." I would willinly be "busted" to hafe one.

I would radder have a photograph of my frow, dhen hafe der old woman *herself*, because, dhere sots der image in all her nadif simplicidy. She got a shmile on her feadures, und her white hands all filled full mit a shilling pair of gloves. But of der inside out of der picture, mine Got! vat a change. Dot shmile dhen vas dhere yet, und dhen hands vas all full mit hair, und dot hair vas once mine. It vas now pooty seldom of my head.

Some phodographers could dook pictures so nadural, dot dhey vas much besser preferred dhen dheir orriginals. I hafe heard of some, dot der orriginal vas efen besser dhen der picture. But dis cases vas seldom.

Der attanced phodographer vill labor to got a heffenly shmile on der feadures of der belated damsel, und vill cofer der wrinkles ub on der face of der antiquated maiden. Ven he vas do dot successfully, he vas make more as a barrel of gold.

A x-eyed friend of mine ish in der pishness, und I called on his house, one day-times, to got ackwainded mit der vay dot de vas dook pictures. I oney shtop so long vat I could saw how it vas done, und so gwick I got me introduced to der chemicalities, I yoost shtart me right away gwick, der pishness in. I found me pooty gwick out dot der "bath" vas for der pictures, not for mineself, and dot after I had dook me one shwim in dot bath, I found me out, I dhen vas not cut out for a picture dooker. I vas learn, und had drank myself in, oney oac shmall knowledge of der, pishness, which proofed more of a detriment dhen good, on ackound I vas ignoronter of der ballance.

By my cidy, we hafe a goot many goot phodographers, und dhey dook goot pictures. But of em all I dink, so far vat I could see, dot Mister Chromo vas dook der best picture of any odder feller in der town.

I reckermemper once dot I had a picture dooken. I vent on der place where dhey keeb pictures for sale. I asked der man dat I wanted to got a picture of mineself. I looked

me at all der faces dot vas hung ub, but I didnd see vas mine already. So I yoost told him dot I would go on annoder place, but dot man told me if I wanted "a picture I must sot for him." Vell, I say alrite, und I sot me down. Der teller dook his box und commenced der oberation. Yoost dhen a muskeedler come phly of my noze, und vas make me more bodder as a hundred tollars. I couldnd keep shtill; I vas blow him away, but he comed all der while back, und I got me so mat I kicked myself. Der pigture got cooked, on a leedle while, und while I could saw me a goot resemblance to der muskeedler. Der oberator vas shwore it was a goot images of mineself.

## Recent Patents.

### BURNISHING PHOTOGRAPHIC PICTURES.

BY G. P. CHITCHELSON.

THE provisional specification which follows describes a press similar to Weston's Patent Burnisher, and was not proceeded with, we believe, because it was found to be an infringement of that instrument:—

"The object of this invention is the construction of a machine or apparatus for burnishing photographic cartes-de-visite and other pictures, thereby imparting to such pictures a brilliancy of appearance and depth of tone unattainable by other processes. This object is effected by the combination of a burnishing bar made of steel or other suitable material, and heated by a spirit lamp, gas jet, or otherwise, and a pressure roller, the carte-de-visite or other picture being placed upon the said burnishing bar and between the same and the roller, and moved by the latter to and fro over the said bar. Upon a stand or frame of cast iron or other suitable material I mount a plate of any suitable metal. Over this plate I place the aforesaid burnishing bar, which may be made of steel or other metal, or of any other suitable material. The top surface of said bar must be perfectly smooth and polished, and must always be kept clean. Below the aforesaid plate I place a gas jet or spirit lamp or other means for heating the burnishing bar; this bar and the picture being burnished, will be protected by the said plate from any smoke or vapour arising from the lamp or heater. Above the burnishing bar I place the pressure roller, whereby the picture is moved to and fro over the said bar. This roller is mounted on a shaft which is provided with a suitable hand wheel or handle, whereby the shaft and roller may be readily operated. The surface of the said roller is roughened so that it will not slip over the back of the picture without moving the same. The said shaft is supported in bearings which are adjustable vertically, and are provided with set screws and springs, or other means whereby the roller may be caused to exert any desired pressure upon the back of the picture as the same is moved to and fro by means of the aforesaid roller.

### ARTIFICIAL LIGHT FOR PHOTOGRAPHY.

BY E. E. J. SELL.

THE following specification describes a highly actinic artificial light for night photography:—

"My invention consists in producing a new photographic light by burning bi-sulphide of carbon with peroxide of nitrogen. As means of combustion, I make use of an ordinary petroleum or other suitable lamp with circular wick, containing bi-sulphide of carbon instead of oil. Water or other cooling medium surrounds the bi-sulphide containing chamber to keep it (the said bi-sulphide) cool. The peroxide of nitrogen is contained in a metal, glass, or other gas holder, which may be lined with asphalt or other suitable material. The peroxide led to the centre of the circular wick of the lamp is caused to be uniformly mixed with the bi-sulphide by impinging against a cone placed with its apex downwards within the circular wick. A stop-cock is used to regulate the pressure of the peroxide, and means are provided to carry away the products of combustion. A reflector is used, when necessary, to direct and condense the light.

"Having thus described and ascertained the nature and particulars of my said invention, I claim, the improved means of and apparatus for taking photographs at night, substantially as set forth."



# The Photographic News.

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## PORTRAITISTS' ADDRESSES TO THEIR CUSTOMERS.

THERE is a great tendency in mankind, when any subject acquires a permanent interest in the mind, to get into fixed grooves of thought and expression. In relation to photography, it has become the almost invariable custom of its devotees, amateur and professional, to speak of the art as a sacred entity, the elevation and advancement of which was, or should be, the first, if not the sole, aim of every one connected with it. The cultivation of such a spirit has about it so much that is laudable that it becomes almost an ungracious, if not a dangerous, thing to question its absolute truth and rectitude. The pursuit of even an ignoble duty with a noble aim elevates the act and the performer. A lofty motive, as quaint old George Herbert finely says, "makes drudgery divine." And if every man worked as owing something to his art, both the art and the worker would gain. We may mention, *en passant*, an admirable illustration of the advantage of combining the ideal and the practical aims. Mr. H. P. Robinson once informed us that when he first entered professional photography he resolved that, without neglecting business, or disregarding the "pot boiling," he would strive to produce every year one or more important pictures which should show the pictorial capacity of photography, and so, as far as possible, aid in strengthening its art claims. The issue is known to photographers all over the world, and gold and silver—in medals, at least—have poured in upon him from wherever photographic exhibitions have been held, from Chicago to "India's coral strand." But to return to the question. It should not be forgotten, in referring to photography, that it is, after all, but a means to an end. With many amateurs it is simply a hobby, or pastime, the pleasure being found in the practice; with others it is pursued as an easy means of securing pictorial results; with others it is an aid to scientific study; but with the professional portraitist it is always practised for the very prosaic, very necessary, purpose of making a living. That is its primary purpose with the portraitist: if he fail in effecting this purpose, it is little consolation to know that he has, in some way, elevated or promoted the advancement of the abstraction of which he thinks as "the art."

It can scarcely be supposed that this phase of the subject has not been well considered by professional photographers generally; but it has not only been insufficiently

discussed, but it has been often totally ignored that with the professional photographer, as with every caterer for public taste—

"Those who live to please, must please to live."

Taking this aspect of the question, one of the first aims of the portraitist is to establish good relations with his customers. His final aim may be to please them with good work, and so secure their continuance and their recommendation. But he must get his customers before he can keep them. The display of excellent specimens in neat show-cases, always clean, fresh, and in good condition; the maintenance of an attractive establishment in good taste, and perfectly kept; and other obvious modes of securing the attention of the public, do not come within our scope for discussion here. Our principal purpose is to call attention to a few of the prospectuses or manifestos by which successful photographers introduce their establishments to the public. In every trade or profession, a card, a circular, a prospectus, or pamphlet is found necessary as an introduction to future customers; and probably in no case is a judicious combination of explanation, advice, and instruction of more value than it is in securing a good understanding between the portraitist and his sitters. A little pamphlet entitled the "Photographer to his Patrons," has already been adopted by many as a mode of popularizing their establishments; and we now propose to describe and extract from some similar little brochures issued by high-class photographers in this country and America.

Commencing at home, let us glance at the brochure of Messrs. Robinson and Cherrill, of Tunbridge Wells: a neat little pamphlet of twenty-four pages, in a dark green enamelled paper cover, with the title, name, &c., printed in silver. The title given to the little work is "Portraits and Pictures Produced by Photography and Art." The opening chapter is devoted to a brief essay on photographic portraits; this is followed by a list of their medals—three or four dozen—obtained at different exhibitions in various towns in England, Scotland, Ireland, France, Prussia, India, and America. A selection of a dozen somewhat lengthy reviews, or notices, from newspapers, magazines, and quarterly reviews follow; then a catalogue of published works, followed by details of styles in which work is done, and the tariff of charges. The "Few Words on Photographic Portraits" with which the little work opens is devoted chiefly to some brief explanatory observations on the capabilities of the art at the present day. "There are few of the educated public," it is remarked, "who are not familiar with the general facts as to the history and character of photography; but its developments, modifications, and improvements during late years have been so numerous and important that only the most skilful of those who have studied it as a science, and cultivated it as an art, have kept abreast with the accumulating discoveries upon which the production of the highest degree of beauty, truth, and permanence depend.

"The general impression in the public mind in regard to photography is, that it is a quick, easy, cheap, and moderately truthful mode of securing likenesses; that these likenesses are never flattering, rarely even doing full justice to the original; that they are not works of art; and that they will fade. This impression, although by no means true of photography in its best phases, is unfortunately justified by a large proportion of the productions of *soi-disant* photographic artists. The greatest bane of photography has been the unfortunate facility with which a slight knowledge of it could be acquired, affording opportunity for the ignorant and unscrupulous to commence the profession of portraitist without the art-training necessary to produce pleasing portraits, or the scientific knowledge to secure any degree of permanency in their works; and thus the impression has gained ground that photography was a mechanical method of securing resemblances, the



transient character of which could scarcely be regretted, because they fell so far short of being true works of art.

"The prolonged study and practice of photography by a trained artist, and the resources placed at his disposal by recent discovery, give a control over the agencies he employs little short of that possessed by the painter over his colours and canvas, and photography becomes in his hands, not a mechanical operation, but a plastic art. His faculties, trained to perceive the most beautiful or characteristic aspect of his sitter; and his apparatus, guided by his scientific experience, combine to produce at once the truest and the most pleasing portrait; his artistic skill enables him to secure grace and ease in the arrangement, life in the expression, and delicacy and vigour in the pictorial effect; whilst the resources of modern photography afford to him, versed in its latest discoveries, the power to give an enduring character to his works, and free them from the stigma of fading away.

"A recent writer in a *Quarterly Review* has remarked:— 'It cannot be doubted that photography has many pictorial offences to answer for, and if its art-claims were to be judged by the productions of eight-tenths of the self-styled "photographic artists" who multiply travesties of humanity, they would assuredly be found wanting. Every form of awkwardness in position, every style of incongruity in accessory and *entourage*, has been exhausted, every canon of art studiously outraged. Even the special claim of photography to accuracy has been ingeniously destroyed by mismanagement of light and shadow, upon which form depends, by the use of bad lenses and worse manipulation, and by the exaggeration in the tendency in photography to mistranslate colour.' This is the stigma which has attached to the art by its practice in uninstructed and incapable hands.

"But the same writer continues:— 'The photographer can stamp the impress of his mind upon his work, and in proportion to his artistic culture will be the beauty of his work.

It is not merely in the distinctive arrangement and accessory, in the management of pose and lighting, or in the attention to expression which is apparent, but in the pictorial feeling of the whole, that this is manifest.

Without falsifying, photography can ameliorate if it be in the hands of an artist, whilst it may easily caricature when it is in the hands of one ignorant of art.' The same writer adds:— 'The fact is, that a good photograph has a truth of its own, rarely belonging to the highest effort of the limner; and the term has become idiomatic in our language, that a faithful transcript of a thing is photographic in its resemblance.'

There is in the pamphlet a curiously studious omission of any instructions to sitters as to costume, time of sitting, or other points which commonly form the staple of a photographer's address to his sitters. We presume that the intention of the portraitists is to imply that they make no conditions about dress, but are content to deal with each sitter in his habit as he lives. Some costumes are certainly more suited for effective portraiture than others; but it is nevertheless often doubtful wisdom to do anything which fixes the sitter's mind upon his dress, or tempts him or her to make any modification of the costume commonly worn. On the subject of prices (which scarcely comes within our province to discuss), we may remark that the scale here seems to hit the golden mean. A correspondent in our pages recently very ably protested against the notion that price was an invariable standard either of value in the work or status in the worker. Possibly it should not be so; but, nevertheless, with the public it will generally be regarded in this light, and, within limits, it inevitably must be so. Good work demands time and care as well as skill; and the expenditure of time and care militates against low prices. Natural skill may cost nothing, but it always possesses a high market value, and cannot often be had in conjunction with low prices. Further, although the exaction of high prices does not

necessarily give status, the possession of good status has a commercial value, and enables the holder to secure good prices; hence good status and good prices are at least associated. In the scale of prices before us, as we have said, we find the happy medium: sufficiently high to pay for good work, but no exorbitant fancy charges based upon a high reputation. We make an extract to show the charges for everyday work.

"Cartes-de-visite, twenty for one guinea, ten for fifteen shillings; additional copies, one shilling each; cartes-de-visites, vignettes, twelve for one guinea; additional copies one shilling and sixpence each; cabinet portraits, eight for one guinea; additional copies, two shillings each; cabinet portraits, vignettes, six for one guinea; additional copies, two shillings and sixpence each; imperial portraits, size about ten inches by eight inches, under glass, one guinea and a-half; additional copies, half a guinea; gold frames for the imperial portraits, half a guinea and eighteen shillings; large portraits (the head about five inches) in oval with dark ground, size of picture about nineteen inches by sixteen inches, five guineas; additional copies, one guinea each; gold frames for ditto, one guinea to one guinea and a-half."

An interesting feature of the little pamphlet we must note before taking leave of it. Our readers may remember a curious and interesting article by Mr. Robinson in our pages on the various allusions by English poets bearing application to photography. This little pamphlet is enriched by quotations of a similar character, with a selection from which we conclude the present notice. On the title-page we have the following from Shakespeare:—

"Nature is made better by no mean,  
But nature makes that mean, so o'er that art  
Which you say adds to nature, is an art  
That nature makes."

Each page is headed with something similarly appropriate: thus—

"The glorious sun  
Stays in his course and plays the alchymist."—*Shakespeare*.

"Shine out, fair sun, till I have bought a glass,  
That I may see my shadow as I pass."—*Shakespeare*.

"For I have heard it said,  
There is an art which shares  
With great creating nature."—*Shakespeare*.

"Be keen in catching likenesses."—*Tupper*.

"Drawn by the powerful sun."—*Shakespeare*.

"As our art is not a divine gift, so neither is it a mechanical trade,  
Its foundations are laid in solid science."—*Sir Joshua Reynolds*.

"Yet I doubt not thro' the ages one increasing purpose runs,  
And the thoughts of man are widened with the process of the suns."  
—*Tennyson*.

"Start into light, and make the lighter start."—*Rejected Addresses*.

"And looke at last up to that sovaine light,  
From whose pure beames al perfect beauty springs."—*Spenser*.

"The best in this kind are but shadows; and the worst are no worse  
if imagination amend them."—*Shakespeare*.

"Art may err, but nature cannot miss."—*Dryden*.

"Sounds which address the ear are lost, and die  
In one short hour, but that which strikes the eye  
Lives long upon the mind, the faithful sight  
Engraves the image with a beam of light."—*Dr. Watts*.

"How little is the cost I have bestow'd  
In purchasing this semblance of myself."—*Shakespeare*.

"Blest be the art that can immortalize."—*Cowper*.

"By the operation of the sun."—*Shakespeare*.

"The shadowed livery of the burnished sun."—*Shakespeare*.

"When with one virtuous touch,  
The arch-chemic sun, so far from us remote,  
Produces, with terrestrial humour mixed,  
Here in the dark, so many precious things,  
Of colour glorious, and effect so rare!"—*Milton*.

Perhaps nothing in the range of literary coincidence could be more apt in its application to photography than these lines from Milton's "Paradise Lost."



### THE VOGEL-MONCKHOVEN CONTROVERSY.

It is agreeable to find a controversy such as has been going on between Professor Vogel and Dr. Van Monckhoven, on the subject of the sensitiveness of bromide of silver to the less refrangible rays, conducted in a spirit of courtesy and good will on both sides; and now that the matter seems practically at an end, it must be gratifying to all that the worthy experimenters are, if possible, more amicably inclined to one another than before. We may sum up the matter in a few words. It will be remembered that Dr. Vogel asserted that by tinting the bromide of silver film, he had made it as sensitive to the yellow and red portions of the spectrum as it is, under ordinary circumstances, to the blue and violet. Dr. Monckhoven, from experiments he conducted, and which he described in a paper to the Photographic Society of London, was unwilling to accept this assertion of Dr. Vogel, and to corroborate the statement, therefore, the latter forwarded, both to Dr. Monckhoven and to ourselves, impressions of the spectrum taken by himself, in which the red and yellow lines were shown.

In the last number of the NEWS it will be seen that Dr. Monckhoven fully acknowledges that Prof. Vogel has obtained impressions of the red and yellow portions of the spectrum. Dr. Monckhoven, however, believes the impressions to be due to the action of continuing rays. The light, he says, must have acted upon the sensitive plate as usual in the first place, giving an impression from the violet as far as the bluish green; then the plate was attacked by diffused light coming from the prism. "Finally, the red and yellow rays of the spectrum acted as continuing rays, and here certainly the tinting of the film by means of coralline, &c., has played its rôle." In this sense he admits Dr. Vogel's discovery to be a sound one, *the sensitiveness of the film changing with its colour*. Dr. Monckhoven believes, however, that the violet and blue rays always act independently of the colour of the film, and that it is only *after* the coloured film has been exposed to diffused daylight that the red and yellow rays come into action at all. Dr. Monckhoven, it seems, therefore, admits that the yellow and red rays do act upon the coloured film, but he will not accept Dr. Vogel's theory of their action.

Dr. Vogel disbelieves altogether in the matter of continuing rays, and certainly brings some weighty evidence against the theory. He believes *all* rays to be chemically active. When he exposes one of his white bromide plates for a brief period, he does not obtain only a slight impression of the blue portion of the spectrum, as would be the case if the action commenced there; nor does he find two maxima of impression in the blue and in the yellow; on the contrary, there is "a uniformly gradual decrease in the sensitiveness of the blue towards the yellow." Again, he finds that the *increase* of sensitiveness for yellow or red by the addition of colour to the film goes hand in hand with the *decrease* of sensitiveness for the more refrangible colours. Far from being *rayons continuuateurs*, Dr. Vogel thinks that the yellow rays should be termed *rayons excitateurs*, for when a plate coloured with naphthaline red is exposed for a short time only, a slight action is to be seen in the yellow part, but of the blue not a trace. Only after some time does the action extend to the green, and thence to the blue and violet; but the impression of these latter is never so vigorous as that of the yellow rays.

### THE IRON DEVELOPER WITHOUT ALCOHOL.

A DISCUSSION has recently taken place in some of the Continental journals as to the omission of alcohol from the iron developer. Herr Fritz Haugk, an able occasional contributor to the *Photographische Correspondenz*, advocates the use of alcohol, and indicates what he believes serious difficulties arising from its omission. Writing to that journal, he says:—

"In a recent number of the *Photographisches Archiv* I noticed an article by M. Dallas in which it was stated that alcohol added to the developer exerted a baneful influence on the latter. It rendered the developer slower in its action, and often caused flat, grey, silver stains. To counteract these defects M. Dallas recommended that alcohol be altogether avoided in the preparation of the developer, and that acetic acid be employed instead. Finally, M. Dallas remarked that it is surprising how brilliant and vigorous negatives are secured in this manner.

"Acetic acid is certainly a body which, like alcohol, facilitates the mixture of collodion with water, and one part is quite capable of rendering six parts of the developer suitable for application to the collodion film. I do not, however, look upon this substitution of acetic acid for alcohol at all in a favourable light, for after a few days a developer thus prepared loses its properties, and a fresh addition of acid has to be made. Again, a developer which contains a large quantity of acetic acid becomes weaker in its action, for a considerable proportion of acid added to the developer retards its action. In a fresh developer this is scarcely noticeable, but is apparent as soon as it becomes decomposed, and attains a red tint. As, however, this retardation may be regarded as due to under-exposure, I will illustrate my meaning by an example.

"About a fortnight ago I prepared two developers, one consisting of—

Iron ... ..	7½ grammes
Water... ..	240 "
Acetic acid ... ..	15 "
Alcohol ... ..	15 "

The second solution I made up of the following proportions:—

Iron ... ..	7½ grammes
Water... ..	240 "
Acetic acid ... ..	45 "

And no alcohol.

"These two developers on the first day gave almost identical results; but after the lapse of about six days, the second one worked much more slowly. Whilst No. 1, after eight seconds, gave a perfectly detailed negative, three seconds more were necessary to produce the same result with the other. In these experiments the plates had been sensitized during the same period, and the time that lapsed between sensitizing and developing was also equal. This must, of course, be specified, otherwise it might be inferred that the cause was elsewhere to be found. The exposure in both instances was also the same, a clear sky without clouds being at hand at the time.

"Besides the point alluded to, another of importance may be mentioned, viz., that acetic acid is more expensive than the best alcohol; and in conclusion I may state that the defects attributed by Dallas to the spirit are never to be feared, provided pure alcohol is employed for the purpose."

As we have for many years past omitted alcohol from the iron developer, and have also advocated its omission, a few comments on Herr Haugk's experience may be desirable. In the first place, it is by no means necessary to add excess of acetic acid as a substitute for alcohol; and the example which Herr Haugk gives is one that no intelligent photographer would dream of adopting. In testing the developer with alcohol omitted, he makes a fifteen-grain iron solution, and adds at the rate of ninety minims of acetic acid to the ounce of developer, and finds that it rapidly loses energy. No wonder. At the expiration of six days a lengthened exposure was necessary to secure a detailed image with this developer. But very few photographers keep a developer six days ready for use. Some prefer to make a fresh developer with crystals of the iron salt every day. Many more keep ready a saturated solution of iron, and make the requisite quantity of developer day by day, or as it may be required; and in such case a very slight excess of acetic acid would be



sufficient to secure the easy flow of the developer, and its ready admixture with the silver solution on the plate, if anything like fair manipulative skill be employed. But in our own practice we have preferred the addition of sugar. A twenty-grain iron solution, with ten grains of fine sugar—crystallized candy sugar by preference—and fifteen minims of acetic acid, to each ounce, will give capital results, flowing in an even, slow, steady wave over the plate, and requiring no alcohol whatever. We believe alcohol to be generally useless, and often mischievous, causing stains and spots. Its use has for years been so common that it has been adopted as a matter of course. We believe that, after fair trial of its omission, no one will return to its use.

### THE STATUS OF PHOTOGRAPHY.

BY GEO. HOOPER.

THE numerous and interesting letters that have been published on this subject during the last two months demand a few words in reply, in order to induce photographers generally to come to some definite conclusions, and to arrive at some practical results.

In the first instance, I beg to say a few words in answer to your last correspondent upon his reply to a letter by "Photographer;" and then, secondly, to draw attention to the practical remarks of Mr. Bovey; and lastly, to suggest means whereby this desirable end may be attained.

The time for talking is now over, and the time for action arrived. Why not appoint a committee of practical men to consider the subject fully, and draw up a scheme whereby photography as an art (if not a *fine art*) may be placed in a more honourable position? This is not only desirable, but practicable. Both the letter of "Photographer" and his confrère are wide of the question. There are professional art photographers, and commercial photographers; the one class tries to turn out pictures full of artistic merit, and the other takes a very fair class of photograph, and although it does not contain the art qualities of the former, yet is perfect as a photograph, and all that an uneducated public expect or (at present) demand. That photography, like everything else, will always, as regards price, be governed by the law of supply and demand, is no doubt a fact; and that some very fair photographs are even now turned out at five or six shillings per dozen may also be a fact; but neither fact at all affects the question we have in hand, namely, how can the status of the art generally be raised?

Mr. Bovey has made a practical suggestion, worthy of serious consideration; namely, that to all who are eminent in the art should be granted a diploma, obtainable in the same way and manner as "R.A." is conferred on dons in the painting art. So "F.R.P.S." might be granted to men of proved ability in the photographic art. This would be a degree worth working hard for, would give increased interest to annual exhibitions, and would inspire confidence in the public. Of course, to obtain such a desirable end, it is all-important that the system of granting diplomas be the most perfect that can be devised, and that a committee of professional photographers shall decide who are worthy of honour. The suggestion that a professional photographer of undisputed merit should be president of such a society or committee is good. It only remains to arrange the details of such a scheme to carry out the idea. The chief rock to avoid is the danger of being too profuse with such diplomas. These should be granted entirely upon merit, and, in order that all aspirants might be tried upon equitable ground, would it not be practicable to erect permanently a studio, with all necessaries for all the various processes connected with the art, and compel such aspirants to produce (say) some four or six negatives, and prints therefrom, in such studio, entirely unaided by a second party?

This brings me to say one word more with regard to the

suggestions on the above subject made in my letter inserted in the NEWS of June 15th, as to the necessity of a general conference of photographers; of a combination of societies and interests; of a system of annual exhibitions, soirées, and conferences in different towns; of one recognized organ for all the societies, and a general interest and participation in the profits of annual exhibitions. Let medals only be given for new discoveries of importance, and diplomas only for extraordinary merit. Will Mr. Bovey kindly publish his ideas with respect to my suggestion in the NEWS of June 15th, and say whether at such a conference the question of granting diplomas might not be discussed with profit? Many would come forward with the necessary assistance, and out of the existing societies a very good committee of eminent professional photographers might be formed to carry out the plan suggested.

### ON VARNISH.

BY D. D. (BELGIAN SUBSCRIBER).

OF all the varnishes I have tried (and I have tried many), the best are certainly the following:—

*First.*—For professional photographers who may require to print a great number of prints from the same cliché:—

Weber's Formula.—Alcohol	...	...	100 parts
Gum lac	...	...	100 "
Common resin	...	...	32 "
Turpentine	...	...	32 "

I put the shellac into the alcohol, and let it dissolve without heat, for the reason that the waxy precipitate will be easily eliminated thus (as stated by Mr. A. Hughes, YEAR-BOOK 1871, page 74). To the clear solution is then added resin and turpentine. This varnish must be employed with a little heat applied to the plate.

*Second.*—For amateurs and photographers who do not use their negatives for a great number of impressions:—

Benzine	...	...	100 parts
Resin dammar	...	...	10 "

These I have used many years, and never found any trouble therewith. My negatives do not crack, nor peel, nor are destroyed or injured in any way.

In 1872 I communicated the formula to my friend, Mr. Leon Rommelaere, Lecturer on Photography at the Museum of Arts and Industries at Brussels, who, after trying, found it so good that in his conferences on photography in 1873, he recommended the formula as the best he ever tried. He added that he had communicated the formula to the War Department of Belgium, and that it had been since that time in constant use there with success and satisfaction. I report this as testimony of the good quality of the formula.

*Third.*—Coloured varnish:—

Spirits of wine	...	...	100 parts
Benzoin	...	...	10 "
Red, orange, or dark blue aniline	quant. suf.		

This formula served me for my experiments on the influence of coloured mediums on the colour of the prints.

When applied with heat, it gives a very hard and brilliant surface. When applied cold, it is matt, and takes retouching well.

### MOONLIGHT PICTURES.

BY DR. J. SCHNAUSS.\*

As but little appears to be known in the matter of moon-shine photographs, a few words on the subject may not be out of place, as such productions have been seen somewhat frequently of late, at the Vienna Exhibition and elsewhere. Some people have believed that such pictures were really secured by means of the light of the moon, because they possessed a peculiar greenish tone. Of course such an idea

\* Photographisches Archiv.



is altogether inexcusable in people who know something about negatives and the printing process, however much the uninitiated may be deceived; but as an interest has been awakened in the matter, I will mention how these kind of photographs may be produced.

In the first place, we must remember that there is a great difference between moon photographs and moonlit landscapes. The first—that is to say, photographs of the moon—are of course in existence, as every astronomer and photographer knows. On the other hand, to take a landscape illuminated by moonlight would be a knotty problem, and, under any circumstances, we think, it would be impossible to secure a picture which would have artistic pretensions.

According to Dr. Krone's experiences, the power of moonlight is as 1 to 6,000 compared with a dull winter's day or magnesium light. It is necessary, therefore, in order to produce moonlight effects, to have recourse to artificial means, and the following process will be found to answer:—

The landscape which is to appear illuminated by moonlight is photographed in bright sunshine with a very short exposure, so that strong contrasts are obtained and very deep shadows. The sky of the negative is covered or rendered opaque, and then a vigorous print is taken upon greenish tinted albumenized paper. The green paper is of the same kind precisely as other tinted albumenized paper, which is largely used for portraiture. Or if this tinted albumenized paper cannot be obtained, then the print is secured on ordinary white paper, and the picture afterwards rendered of a greenish hue by means of water colour or dye. When an impression of the landscape has been obtained, this is protected by a mask, and then into the sky portion is printed a cloud negative, showing the orb of the luminary. A suitable mask is contrived by cutting out the outline of a print from the same negative, and placing this as a shield over the landscape impression.

As in many moonlight pictures the outline of the luminary is to be seen, it stands to reason that the disc has also been secured by artificial means.

[As in most moonlight pictures the moon is shown, the operator must remember that the shadows should fall towards him; for this reason it is well to take the landscape rather late in the day, with a declining sun, the effects of which may be shaded from the lens in some degree, if found to interfere too much with the picture.—  
ED. P. N.]

### LIGHTING FOR PORTRAITS.

BY L. G. BIGELOW.\*

So much has already been written on this subject, that a feeling of embarrassment controls me in introducing it again to your readers; but feeling also that herein is the great need of the majority of the fraternity, and that it is indeed the key to success in portrait photography, I am induced to write a short article under this head.

The whole system of lighting a subject for a photographic portrait is contained in the following sentences:—The light must be properly balanced; the exposure sufficient to bear out the lighting; and the development regulated to the exposure. No one of these three items can be in error without destroying, with mathematical certainty, the perfect result. You may approximate and produce good pictures, but not the best. Place a sitter under an uncurtained light, and even in the most favourable position possible, and we at once see that one side of the face is in very strong light, and the other in very strong shadow. We can hardly see any detail in the shadow, except we squint the eyes and shut out the volume of light which confuses our vision (as it will also that of the lens); then we see some of the details. Now take a large card-

board, and hold it to the side of your face nearest the direction from which the light comes, and hold it also in such a manner that you see only the shadow side of the sitter's face, and observe how, at the instant the light side of the face is obscured by the interposition of the card-board, the shadow seems to lighten and become transparent. We perceive at once, from this experiment, that the shaded side of the face is not in the deep shadow it seemed to be, but that the force of contrast caused it to appear so; and, *practically*, for all purposes of photography, it is so, for we cannot make our lenses squint. You will see by this that by balance I mean an even illumination or light so managed that the contrasts shall not be white and black. There is no pure white on the flesh of the pictures of our best painters, and the high lights of our best photographs are always kept many tones below white; but, for all this, the shadows are so managed, by being kept transparent and full of detail, that they seem much lighter than they really are.

Now draw your curtains until the proper balance is obtained. By these contrasts, in connection with the position, we may develop or obscure many characteristics in most faces, and in the good judgment used in doing so is shown the true artist; for it is a feeling, a thought, a sentiment, a glimpse of the inner man which he is trying to give to his picture, and unless the heart is interested, the result will be as lifeless as "Mark Twain's Mummy." If the light be obtained by curtaining down, and thus gaining balance, the exposure must be full; on the other hand, the same result may be obtained by an exposure of one-third, more or less, under a large light, because stronger illumination may be used without increasing the ratio between the brilliancy of the high lights and proportionate density of the shadows. Under all lights the operator cannot obtain this balance by both methods, for if the light is already small, the only way left is by reflection, and by curtaining down an already weak light, and making the exposure very long, to get the required details in the shadows. Hence I am partial to large lights, which require less use of the curtains to temper and control them. They give always sufficient diffusion, an ender possible any degree of strength obtainable by smaller and more direct lights. I think, as a rule, at least three-fourths of the operators in this country expose their plates too short a time in the camera to get the best results. The stronger the contrasts in your lighting, the longer must be the exposure of your plate, to blend and soften the lights, make transparent shadows, and give fine modelling and middle tint to pictures. It is like the use of a blender to the painter in oils. If used with skill, it produces on a too crisp, hard picture an enchanting softness, without destroying strength and character; but in unskilful hands the result is insipid and lifeless. Now, in lighting your sitter, remember you hold in your hands an equivalent power equal to the blender of the painter, and try to regulate the exposure of your plate to the degree of strength used in the lighting of the subject. Before you flow the developer over your plate, remember all the details of your skylight and camera work, so that at the last moment you may not ruin, by a too strong or too weak development, what otherwise was well nigh perfect.

### Correspondence.

#### STEREOSCOPES.

DEAR SIR.—Your correspondent "J. H. B." seems to have "hit the right nail on the head" when remarking on an imperfection in the ordinary construction of the lenticular or refracting stereoscope. He says that by the ordinary method of admitting the light from above, or by a reflector in the close box system, "the photograph is in the best possible position for any roughness of the paper to be made unpleasantly apparent."

\* *Photographic Mosaics.*

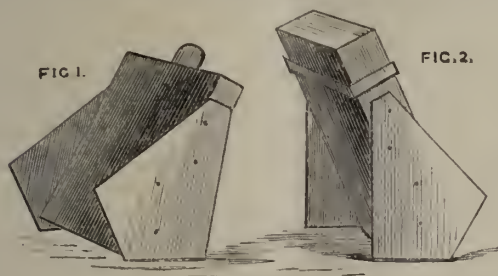


This observation is quite correct, and I am at a loss to imagine why a skeleton form of the instrument (admitting light on all sides) has not met with universal adoption. The best construction, in my opinion, is that invented by Prof. Oliver Wendell Holmes, which has a shale or dark screen for the eyes, all the other parts of the instrument being left freely open. I have an American stereoscope of this pattern which can be held in the hand, or screwed to an upright support, and this appears to be at once the cheapest and best form yet introduced. Something similar is made in England, but it lacks the leather hood.—Yours very truly,

JOHN SPILLER.

### TO AVOID PINHOLES IN THE NEGATIVE.

DEAR SIR,—In your last Friday's issue Mr. E. Z. Webster recommends a plan of turning the bath over to avoid pinholes in the negative, as he explains by two figures. We enclose you a plan we have used successfully for a number of years for the same purpose. We have a box made so that the glass bath fits exactly inside, as shown in fig. 1, which is ready to receive the plate. On the box are screwed pieces of wood shaped as the figs. 1 and 2; when



the plate is immersed in the bath, we have nothing to do but place on the lid, and tilt the box over on the other slant, as shown in fig. 2. The top edge of the plate then drops against the side of the bath, and, as the collodion side is down, and the glass side up, any dirt that may be in the bath must of course drop on the glass instead of the collodion, thus doing away to a great extent with dirty plates.

Having had the above in use for many years, we can recommend it as a "perfect cure" for pinholes caused by dirt in the bath.—Yours respectfully,

Blackburn, Sept. 21st.

WOLSTENHOLME BROTHERS.

### THE CRAWSHAY PRIZES.

DEAR SIR,—I have to call your attention to an error in the announcement signed by Mr. Friswell, which appears in last week's NEWS, relative to the Crawshay prizes.

No. 3 Portraiture Prize will be given for heads not less than  $4\frac{1}{2}$  inches from the top of forehead to bottom of the chin. Heads half an inch over  $4\frac{1}{2}$  inches will be disqualified.

All pictures forwarded to the Exhibition to compete for the prizes must be marked on the front, "Crawshay Competition."—Faithfully yours,

H. BADEN PRITCHARD.

War Department, Woolwich, Sept. 23rd.

### Talk in the Studio.

COLLODION FOR RESTORING BURNT DOCUMENTS.—Many of the papers charred in the great fire at Chicago are said to have been made readable by pouring collodion over them. It forms a thin transparent film, and dries in a few minutes. The printing or writing can be read through this film.

PHOTOGRAPHIC GALLERIES IN CHURCHYARDS.—The Shrewsbury Burial Board finds itself just now in a curious difficulty. It appears that a practice has grown up in the town of affixing to the tombstones in the cemetery the photographic

carte-de-visite of the person buried beneath. The exhibition attracts the curious, who, in their efforts to get near the illustrated tombstone, walk over the grass, to the detriment of the board's property. 'By allowing the grass to grow long, and then cutting it,' the board realize as much as from £20 to £30 a year, and consequently view with the gravest displeasure this new manifestation of mourning. The deterioration of the graveyard hay crops is, of course, a very serious matter. But there are other considerations that make the threatened new fashion one which it is eminently desirable should be nipped in the early bud. In some minds there is probably a feeling of revolt against the desecration even of an unfamiliar graveyard by turning it into a photographic gallery, through which the curious may roam on fine Sunday afternoons. There is no doubt that, as far as the bereaved relatives who have thus adorned the borough cemetery are concerned, the exhibition is well meant, and is born of the conviction that a passing stranger would be glad to pause and look for a moment upon the counterfeit presentment of one who, perchance, filled a large space in their life. Different persons have diverse ways of expressing an identical sentiment. Some cherish the memory of their dead solitarily in their hearts; others, it appears, take out one from a dozen cartes de-visite of the departed, and paste it over the tombstone. The subject is one which is not to be argued on its merits, and on which hard words may not be said. But we are free to make the observation that it is the duty of a local burial board carefully to guard its sources of revenue, and that grass which, allowed to grow long and then cut, brings in from £20 to £30 a year, is worth looking after."—*Daily News*.

A TIGHT WOODEN BATH HOLDER.—This may be made by merely pouring hot asphaltum varnish (such as is used for gravel roofs) in the inside and out again of the wooden baths; enough will adhere to make a perfect holder. I have used such an one for about a year. It is all right; but a better one can be made of wood (pine is as good as any other) bolted together and dipped in the hot varnish, so as to be coated both inside and out. The wooden bath has the advantage over all others, because it is light, will not break, and is so very easily made.—*Bulletin*.

SUN OBSERVATORY.—*Nature* states that the German Government has determined upon the erection of a sun observatory upon a large scale at Potsdam, Drs. Speerer and Vogel having been appointed to undertake the telescopic and spectroscopic observations. The directorship offered to Dr. Kirchhoff was declined by that gentleman, as he was unwilling to leave Heidelberg.

THE FIRST OBSERVED TRANSIT OF VENUS.—The rare phenomenon of the transit of Venus across the disc of the sun, which will attract all scientific eyes on the 4th of December next, was observed for the first time in history under rather touching circumstances two centuries ago. According to a memoir recently issued, a young student named Horrocks had devoted himself, with true scientific ardour, but without any instruction, to the study of astronomy, and had calculated for himself that a transit of Venus ought to occur on a certain 24th of November, when the extant authorities had announced that none would take place during that century. Poor young Horrocks was curate of a little village named Hoole, near Preston. The 24th of November proved to be a Sunday, and the hour when he expected the transit that of his evening service, for the performance of which it was impossible for him to find a substitute. As he wrote to his only friend and fellow-student, a young man named Crabtree, he watched the sun, now clear, now clouded, from dawn till the afternoon, and then, as he could not forsake his solemn duty for such "an ornamental pursuit" as astronomy, he sorrowfully went to his little church and got through his duties. When he returned, lo! the clouds had all cleared away, and the image of the sun, reflected on the paper he had prepared, showed the small round black spot of the planet impinging on its disc. In the midst of his ecstasy Horrocks had sufficient command of himself to make accurate observations, which have since been the base of much useful astronomical calculation. But the career thus brightly opened, and which promised such scientific triumphs, was very shortly arrested. Horrocks died suddenly, at the age of twenty-two.—*Echo*.

LEAF PRINTS.—A correspondent of the *English Mechanic* gives the following hints on leaf printing:—"The bichromate of potash photographic process gives but a faint picture, even after lengthened exposure to the sun. The image may be



reddened by a dilute solution of nitrate of silver. Blue leaf prints are obtained by floating paper on a strong solution of ferriyanide of potassium, commercially called the red prussiate of potash. They are fixed by simple washing. By Obernetter's process, using salts of copper, pictures may be obtained in different tints of deep red and violet, with intermediate shades; but five different solutions are required, and the process, though not difficult, is rather tedious. Leaf prints of the greatest beauty and delicacy may easily be made by amateurs by the ordinary processes of photography on paper, scarcely any utensils being needed besides those found in any household. Make a solution of sixty grains of nitrate of silver and sixty grains nitrate of ammonia to the ounce of water. Float pieces of albumen paper, obtainable at any photographic supply store, on this solution for half a minute or a minute; pin up to dry in the dark. When dry, lay the paper on a thin board, the leaf on the albumen surface, and upon this a pane of glass. Fasten all together with spring clothes pins, and expose to the sun till the darkened albumen paper begins to show a metallic marbling; then remove from the glass, wash, and immerse in a solution of chloride of gold. For a ten cent sheet of albumen paper, eighteen by twenty-two inches, a grain and a-half of chloride of gold is needful. Dissolve in a pint of warm water, add a teaspoonful of salt, and a little chalk to remove the acidity; leave the washed leaf prints in this till they have assumed a pleasing shade (ten or fifteen minutes will be sufficient); then immerse ten minutes in a solution of hyposulphite of soda, two ounces in ten of water, remove, and wash thoroughly; if possible, leave over night in running water. These prints are very pretty. In experimenting with them, I obtained beautiful results by soaking them in aniline dyes; the colour does not show on the black ground, but the leaves shine out like exquisite paintings on ebony. The entire expense for chemicals (excepting the aniline colours) is \$2.50 for this process; this will be enough for twenty square feet of pictures.

## To Correspondents.

WM. CROSS.—The office for the registry of copyright is the Stationers' Hall, Ludgate Hill. All registrations must be effected by the photographer, or some one on his behalf, personally, as the authorities there decline to receive instructions by letter. The fee charged at the office is one shilling, and one penny for the proper form in which to enter details. The term of protection is during the life of the author, and for seven years after his death. The simplest plan, if you have no agent in London, is to send a copy of the photograph, with full instructions, such as you will find detailed in our YEAR-BOOK for 1863, to our Publisher, together with eighteen penny postage stamps to defray fee and portage. He will attend the office, and see the registrations effected for you.

J. DAVIES.—The best material for mounting prints on thin cardboard, so as to avoid cockling, is glue, or the mounting material sold by Marion and Co. The great object is to avoid using anything containing much water. Glue when in a state for use contains less water than paste, and Marion's material contains a good deal of alcohol in place of water.

J. T. L.—Card portraits will, we believe, be admissible to the exhibition, and, we presume, on the same conditions as last year, which restricted the contributor of cards or cabinets to one frame of twelve pictures. Mr Crawshaw offered, besides the prizes for large portraits, four prizes of £25, £12, £10, and £5 respectively for the best three landscapes not less than 10 by 8, and second best; and for the best landscapes of any size, and second best. We cannot ensure answers to questions reaching us later than Wednesday evening until the following week.

ARTIST.—There is nothing in the official letter of the secretary about coloured work at the forthcoming exhibition, and we have no information as to whether the exhibition committee, who have the arrangements in hand, have come to any determination or not. Last year it was determined that coloured work should not be admitted, and we presume the same conditions will obtain this year.

F. R. M.—Tea as well as coffee has been used as a dry plate preservative. M. Davanne some time ago recommended its use as a final wash in the eolodio-albumen process in place of gallic acid. After the second process of sensitizing and thoroughly washing, the plate is coated with an infusion of tea and sugar thus made up:—

Water	...	...	...	500 cents. eub.
Tea	...	...	...	20 grammes
Sugar	...	...	...	25 "
Alcohol, 368 strength	...	...	...	25 cents. eub.

W. STREET.—See a letter on the subject of your note.

NORMANDY.—We scarcely think that the Channel Islands could be profitably visited during the winter months by a professional landscape photographer. The climate is mild enough, both in Guernsey and Jersey, but there are cutting winds sometimes, with sleet and snow, which have quite as hurtful an action upon the trees and vegetation as the cold weather in this country. Moreover, there are not many subjects at hand of sufficient interest for publication. There is the rocky bridge between Upper and Lower Sark, called the "Coupé," Elizabeth's Castle, and some quaint old towers, all of which an amateur would feel an interest in depicting; but we fear a professional photographer could scarcely make the journey pay its expenses. In some parts of Devonshire and Dorsetshire, and the back of the Isle of Wight, there are spots of a less wintry aspect to be found, but we should hesitate before advising a professional photographer to pass three months in any district whose avowed purpose was to secure photographs for publication as a paying speculation. Landscape photographs are taken so well and cheaply by local photographers, that one's productions must be exceptionally good to secure a sale. A visit to the interesting towns of Belgium and Holland might be undertaken, perhaps, with advantage, and there are many scenes of Dutch winter life worthy of depiction.

G. D. S.—The lenses of your half-plate camera are probably for portraits, and are therefore ill adapted to copying purposes. To copy full-size, the camera must be drawn out to twice the equivalent focus of the lens. If, therefore, the focus of your lens be seven or eight inches, the length of camera necessary is at least fourteen or sixteen inches. Most half-plate cameras only allow of making reproductions a fourth of the diameter of the original.

2. You do not describe the nature of your instruments. A rectilinear lens is generally employed for copying purposes. 3. Most photographs sold are copyright, and may not, therefore, be reproduced. The same may be said of pictures in the *Graphic*, *Illustrated London News*, &c. Only the other day *Punch* objected to its pictures being copied by photography, although, in this case, they had been reduced to very tiny dimensions.

J. CORDELL.—We should think that your pinholes arise from a mechanical, rather than a chemical cause. Is there any dust in your dark room? Do you employ a camel-hair brush to wipe your plates before applying the collodion, and, if so, is it kept in a clean place? Try your friend's bath again, in his own studio, but with plates of your own cleaning, and see if the defect still appears. You will then find out whether it is the dark room, bath, or plates that are at fault.

L.—Try plate paper, such as lithographers use. This is much better adapted for the preparation of the bichromate invisible photographs than ordinary bibulous paper. It is unsized, and therefore allows the bichromated gelatine to be as fully absorbed as ordinary filter paper; it has, however, a much better surface, and its texture is more dense.

BEGINNER.—The glare in copying may be prevented, to a great extent, by placing before the transparency a sheet of ground glass, which breaks up the light. If the transparency is a carbon one, the gelatine in the thicker portions of the image sometimes acts in a most vexatious manner, globules of the matter forming minute condensers of light, and thus imparting a solarized action to some portions of the reproduced negative.

Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED.

- Mr. R. J. LITTLEJOHN, Kingston-on-Thames,  
Photographic Group of 12th Surrey Rifle Volunteers.
- Mr. J. S. CATFORD, Ilfracombe,  
Fourteen Photographs Decorations of Ilfracombe.
- Mr. S. WINTER, Waterford,  
Five Photographs of Rev. V. Flood.  
Five Photographs of Rev. G. A. Wheelar.  
Photographic Group of Revs. V. Flood and G. A. Wheelar.
- Mr. GREGSON, Linton, Beds.,  
Two Photographs of Rev. R. Eland.  
Photographic Group of Rev. R. Eland and Family.
- Rev. J. J. TWELLS, Linton, Beds.,  
One Photograph of Rev. J. J. Twells.
- Mr. FENALL, Shifnal,  
Photographic Group of 11th Shropshire Rifle Volunteers.
- MESSES. HALSTED and BROOKS, Whalley,  
Three Photographs of Whalley Church.  
One Photograph of Statue of Dr. Whittaker.
- Mr. W. H. MOORE, Bristol,  
Photograph of Tablet to late Major Tireman.
- Mr. D. J. GRANT, Builth,  
Photograph of Band of Glamorgan Volunteers.
- Mr. ARGALL, High Cross, Truro,  
Photographic Group of Portraits of Revs. S. E. Rowe, F. Mason, and T. Evans.
- Mr. E. S. CLOWES, Walworth,  
Photograph of Rev. A. Fergusson, of Ealing.  
Photograph of Mr. S. Johnson, Schoolmaster of the Tabernacle Schools.
- Messrs. W. and J. PIGOTT, Leighton Buzzard,  
Three Photographs of Elizabeth Leatherhead.



## The Photographic News, October 2, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO. MILITARY BALLOONS AND PHOTOGRAPHY—GLUE FOR MOUNTING—A NEW DICTIONARY OF CHEMISTRY.

*Military Balloons and Photography.*—The subject of reconnoitring from balloons is again attracting the serious attention of our military authorities, and there seems at last some chance of the difficult problem being satisfactorily solved. The thing to be done is to ascend to an elevation sufficient to observe the tactics of an enemy, and rapidly note these either on a plan or map, or, better still, by obtaining an instantaneous photograph of the scene. Photography has hitherto received but limited application for taking observations from balloons, although two or three successful attempts have been made to secure pictures with the camera. A photograph of the city of Philadelphia, taken from a balloon, we remember to have seen, which gave an accurate, if rather blurred, depiction of the geometrically built town, a sketch such as would have been invaluable for war purposes, supposing the place to have been occupied by the battalions of an enemy. Nadar, the great Paris aeronaut and photographer, who was appointed one of the chiefs in the postal department during the Paris siege, to superintend the *ballon monté* service, has recently been successful in securing a balloon photograph which, Sir Charles Wheatstone informed us, was of a most successful character. The difficulties to be overcome (and these have militated hitherto against the undertaking of photographic observations from balloons) are the gyrations and restless motion of the machines in the air, which render any exposure but the most rapid quite impossible. The extreme buoyancy of the balloon and the action of the air currents are almost insuperable difficulties in the photographer's path. Our military authorities have lately, however, had under their consideration a balloon different to those ordinarily employed, and its slow and steady ascent will, no doubt, diminish in some degree the photographer's troubles. The machine is a Montgolfier, or fire balloon, which, as our readers know, ascends by reason of the hot and rarified air in the sphere, a heating arrangement in the balloon providing a supply of hot air during the whole of the voyage. The particular balloon under trial is the invention of M. Menier, who, by using a petroleum oil furnace, is enabled to inflate his balloon in half-an-hour. There is no necessity for a supply of coal gas, or hydrogen, which in war time is a difficult commodity to provide on the field, and moreover a much coarser and cheaper material can be made use of than ciled silk when hot air is employed instead of gas. Instead of darting into the air like an arrow, the Montgolfier balloon ascends with much deliberation, and never attains an height above three hundred yards or so, for it stands to reason, that as soon as the machine ascends to a stratum of air of the same rarity as that inside the sphere, there is an end to its buoyancy. A balloon such as this seems especially suited for military purposes, for it involves no special stores, and may be got ready within an hour; the height to which it ascends is quite sufficient for taking observations, and, being of a steadier and more stable character than the gas balloon, reconnoitring with the field glass or the camera could be undertaken with much less difficulty. Moreover it is less vulnerable, for a bullet, or even shell, tearing a rent in the canvas would have no such disastrous results as would be the case in a gas balloon. Before good photographs, however, can be taken at a great elevation, some modification will be necessary in the camera, to prevent the light from flooding into the instrument when an oblique view is secured; otherwise the result is an image that lacks sharpness and vigour.

*Glue for Mounting.*—Photographers are apt to be too

fastidious in their selection of a suitable glue for mounting, and sometimes go so far, even, as to employ pure gelatine in lieu thereof. The glue best adapted for mounting, whether employed alone or in admixture with gum, is, according to our experience, the ordinary "town-made" glue, which we prefer to "long Scotch," and other finer descriptions. One of the principal points is, to have a material which requires a minimum amount of water to render it adapted for mounting, and this is the case when the gelatinous matter is worked up into a foam or froth; applied in this form to the back of a print, it is spread over the surface with great facility, and the small quantity of water in the material may be judged by the fact that when the tiny bubbles have subsided there is scarcely moisture enough to make it adherent. By having so little moisture, there is no chance of any liquid glue exuding from the margins of the print when this is pressed down, and, as everybody knows, there is nothing so untidy as a line of glue bordering the print. Bookbinders will tell you that it is only in the form of froth and foam that glue can be satisfactorily used for mounting, as it is then but sparingly applied, and may be managed in a cleanly manner. The finer sorts of glue and gelatine will not work into a froth so easily, and if applied in the form of a solution, a far larger quantity adheres to the back of the print, and then great care is necessary to prevent the excess which is pressed out from soiling the mount.

*A New Dictionary of Chemistry.*—Muspratt's Dictionary of Chemistry is to be re-issued by Messrs. Mackenzie, of Glasgow, for, during the past fifteen years, so much progress has been made in science that a large portion of the work is quite out of date. It will be almost entirely re-written, and the great improvements that have recently taken place in photography will not be overlooked. Mackenzie's Dictionary of Chemistry, as it will henceforth be called, may be looked for early next year.

### AMERICAN CORRESPONDENCE.

#### COLLODION FOR PORCELAIN PICTURES—THE DEVELOPMENT—SALTING PLAIN PAPER.

*Collodion for Porcelain Pictures.*—The last month seems to have had something in it which has made my correspondents very communicative. I guess it must have been the Chicago Convention. In lieu of anything special, then, I will give you a few notes from the letters I have received, beginning with a very excellent extract from Mr. G. Cramer, of St. Louis, on the much abused and little understood collodion for porcelain pictures. Mr. Cramer says:—

"The beautiful softness and richness of a good porcelain picture, which cannot be obtained in any other print, is so charming and so much admired by the public, that it is only surprising that porcelain pictures are not made more frequently. The public taste is in favour of them, so it seems to be on the photographer's side to introduce a greater demand for them than heretofore. The reason why they are not made more frequently seems to me in the trouble which most operators have experienced in the production of good, sharp, and brilliant prints on porcelain. They are less liable to fade than prints on albumen paper, and if glass of ordinary good quality is used, both for negative and print, they can be obtained sharp and distinct. But the principal reason for failure seems to lie in the instability of the chlor-silver collodion, which may work very fine when newly made, but after a short time will generally work flat and unsatisfactorily, because the chloride of silver is precipitated, and falls to the bottom of the bottle, instead of being kept in solution as it should be. As soon as the silver is precipitated the collodion is worthless for printing, and a new lot has to be made, causing considerable trouble and annoyance—too much, perhaps, for making only one picture at a time. It has been my aim to overcome this trouble, and I have succeeded perfectly in making two different collodions, one containing the silver, and the other the chloride, so that at a moment's notice a good working collodion can be obtained by mixing equal quantities from both bottles. Here are my formulæ,



which I have used to my best satisfaction for the last two years.

"*Collodion No. 1.*—First dissolve 60 grains negative gun-cotton in 2 ounces alcohol and 3 ounces ether. Take 120 grains nitrate of silver, powder it very finely, put this in a small bottle with 3 ounces alcohol, and heat by setting the bottle in boiling hot water until all the silver is dissolved in the alcohol. As soon as this is obtained, pour the silver solution, while still hot, in the collodion, stirring up all the time to secure a perfect solution.

"*Collodion No. 2.*—Thirty-two grains chloride of strontium, and 24 grains citric acid, are reduced to a fine powder and dissolve in 4 ounces alcohol; add 4 ounces ether and 30 grains negative gun-cotton. These two collodions will keep for any length of time, and when mixed in equal proportions will produce brilliant prints.

"To obtain fine porcelain prints proceed as follows: 1st. Coat the porcelain plate with albumen from fresh eggs and water, equal quantities. 2nd. After the plate has dried (without heat) warm it and let cool again. 3rd. Coat with the collodion (mixture of Nos. 1 and 2) in a moderately dark room, and dry the plate perfectly over a lamp. 4th. For printing, lay the negative on the prepared porcelain, being sure to have it in the right place; protect the back of the porcelain with yellow paper, and put plenty of patent clothes-pins all around the edges to secure a good contact. This is better than any porcelain printing-frame. 5th. In printing, put out in the light, at the same time, a silvered piece of albumen paper under a negative of the same intensity as that for the porcelain, and as soon as this paper print is dark enough, the porcelain picture is dark enough too. The negative should never be moved to inspect the proceeding of printing, which moving is unnecessary this way. 6th. After printing, wash first in plain water, next in water containing a very little salt. 7th. Tone in water 8 ounces, 1 drachm of gold solution (1 grain per ounce strong), made neutral by adding a drop of sal soda solution. 8th. After toning and washing, fix in hyposulphate of soda 1 ounce, and water 10 to 12 ounces."

Mr. E. D. Ormsby follows with some excellent suggestions on managing the development:—

"Many photographers devote too little attention to the developer. They have a certain formula for mixing it, and they always use it the same strength, be the subject light or dark, well timed under the light, or untimed. We have a great power in the developer. As much depends on skilful development to obtain fine results in the negative, as skilful lighting—in fact, more, for by skilful manipulation a negative with faulty lighting can be made to produce good results. As an example, take children's pictures. Where you are obliged to light strong, and then can get often only two or three seconds' exposure, by using your ordinary strength of developer, and keeping your plate in motion during the development, you are bound to get harsh results. Increase the strength of your developer one-half, and hold your plate still during development, and note the difference in the result with the same lighting and exposure. For brunettes, light soft, time well, and use a strong developer, and don't rock the plate during development. For blondes, use a little stronger contrasts in lighting, time well, and use weaker developer, and keep the plate moving gently during development. For white draperies, use a soft light, long exposure, and a weak developer. The advantage to be derived by varying the strength of the developer, for different subjects and different conditions under which we are forced to work, is evident to all. But some will say it is too much trouble to keep several different strengths of developer on hand. I say, not at all. Make a stock solution of iron: 1½ ounces of iron to 20 ounces of water; acetic acid, 2 ounces. Keep a bottle handy containing water 20 ounces, acetic acid 2½ ounces, and use it to weaken your developer as you use it. By this method you can change the strength for each sitting if you wish."

Mr. W. L. Shoemaker sends the following useful suggestions in reference to salting plain paper:—

"To those preferring to salt plain paper for their own use, the following hints may be of use. The kind of salt employed has an effect upon the tint of the print; the weight of salt employed has the same effect upon the tint. Salting with a bath of weaker strength is shown by the print having a bluish, weak look, and an entire absence of purplish contrasts in the tints of the face. Over-salting produces paper that prints slow, blacks feeble and reddish, tone apt to be measly, and drying flat. Saxe plain paper better floated than immersed, and should be laid on until the paper is perfectly flat, then lifted as carefully as in silvering.

The quantity of gelatine used in connection with the salting is generally different with every printer; but for medium Saxe paper I would recommend, at this season of the year, about one box Cox's gelatine to four gallons salt solution. In winter this can be nearly doubled. This same solution will be strong enough for the roll Saxe at this season. Salting with chloride of ammonium alone prints rather brownish, and the paper does not keep so well, or print as quick, as if used in equal proportion with common salt. So the resumé would be—

Chloride of ammonium	...	...	...	1½ grains
Common salt	...	...	...	1½ "
Water	...	...	...	1 ounce
Gelatine, 30 grains to quart for summer;				
double, or nearly so, in winter.				

Saxe paper so prepared should be floated and fumed same as albumen paper."

(To be continued.)

## BEGINNERS.

BY PROFESSOR H. VOGEL.\*

OLD and young, when they take up photography, have generally no ideal purpose in view beyond the practical project of gaining their daily bread with the aid of the camera. They care very little for the chemical reactions, or the action of the light, or the disposition of molecules, &c., and less still about the question whether photography is really an art or not; their object is to create a good business, and this goal they try to reach as quickly as possible. Generally speaking, they begin by undergoing a few weeks' tuition under some other photographer, where they learn to coat a plate in a passable manner.

I am often asked how long is really necessary in learning to become a photographer, and I always reply that the matter very much depends upon the individual himself. Those who possess a knowledge of chemistry, and have natural aptitude, will learn to take negatives in a very short time. I could mention a well-known scientific man who studied my manual carefully, and came into my studio impressed with a good deal of technical knowledge of the matter, therefore; and under these circumstances there was really nothing for him to learn beyond the practical manipulations, the pouring on of the collodion, developer, &c., and the adjustment and working of the apparatus, things obviously that can only be taught by demonstrations. This gentleman was qualified to operate in five days. Of course, during this short period he had not been looking on with his hands in his pockets, lounging about under the impression that he knew enough, but he practised at home what he learnt from day to day, and was exceedingly successful in what he did.

Another pupil that I had, who was an exceedingly good chemist, and thoroughly acquainted with the materials which he had to manipulate, turned out quite the reverse, for after six months' tuition he was still a clumsy operator. He belonged to that numerous class which are usually termed "Butterfingers." When he took up a plate to clean it, it slipped through his fingers; the dipper he would infallibly break after one or two experiments; the developer ran off the plate; and the filter never acted under any circumstances. I was exceedingly glad to get rid of so awkward a pupil, for I could never have made anything out of him. These two are, of course, merely instances, and do not hold good in all cases.

There are people who enter a studio without any previous knowledge, and who are exceedingly quick in picking up the first rudiments of the art. In a week they are so self-satisfied that they hasten home to follow up their success, but, unfortunately, find themselves stuck fast in a day or two over a question about which they possess no experience.

The matter is easily explained. It is easy enough, when you have good plates prepared for you, good collodion,



good dipping bath, good developers, intensifiers, &c., to secure a good picture, especially when found in a well regulated studio; success is here obtained without difficulty; but the beginner has to thank the pure chemicals and the photographer who has prepared the baths and solutions for it, for he does not know how soon these may become changed after working or standing some time. He finds that the collodion—especially if the drainings go back into the bottle—becomes thicker and thicker; it gathers dust and impurities, and thus spots and stains are produced, whose presence he is unable to explain from his eight days' apprenticeship. It is the same with the dipping bath. Unfortunately, a bit of lime or kaolin has fallen into the solution, and this has rendered it slightly alkaline, and at once the plates show signs of fogging; or, again, the collodion is full of organic impurities, which produce streaks on the sensitive plate; or the film has other defects, such as pinholes, patches of insensitiveness, flatness, &c. All these phenomena, which may not come unexpectedly to those who have studied a photographic manual, are enough to confuse any beginner who relies upon his own brief experience in the matter. If to these well known defects we add, moreover, those that arise from faulty exposure or intensifying, bad fixing and varnishing, we have no inconsiderable host of disagreeables. I have pointed out in my manual as many as sixty different sources of failure, and this number is by no means complete. Those who desire to know something about these vexatious phenomena, and the means necessary for their avoidance, will not be able to finish their apprenticeship in a week, for it is only long practice and study that make the skilful photographer.

There are some people who work well enough under the guidance of another, but who are quite helpless if left to themselves. I have had pupils who, after six months' tuition, always come to me nervously with the question: "How long shall I expose?" These very seldom make good operators. Others, again, never come for advice at all, but at once set about preparing a second plate, in case the first has not been sufficiently exposed. These latter always learn something. I can mention others, again, who deemed the operation of plate polishing far too tedious, so they turned their attention to the matter of albumenizing the plates, but only experienced worse and worse failures. They employed one collodion after another, hoping in the end to find a way out of their difficulty, and never thinking for one moment that when strange materials are made use of some time must elapse before they can get thoroughly acquainted with their behaviour, for their employment may perhaps involve the application of chemicals other than those at hand.

Some little time ago I narrated an instance of an old and worthy photographer who could secure no results at all with a collodion which, in my hands, worked perfectly; and therefore a beginner may very well encounter such difficulties without being able to help himself at all. Of course the photographer in question was simply an operator, and had scarcely any knowledge of chemical principles, which are so necessary in employing collodion and dipping bath, to which it is the custom to ascribe most failures.

Dr. Jacobsen says that a little chemistry should belong to the culture of all men: and the photographer is a man. There are many operators who take excellent pictures, and yet boast that they know nothing of chemistry. This, however, is mere nonsense, for such people, if they have not studied chemistry theoretically, have been so long working with photographic chemicals and observing the reactions, that they have become possessed of the chemical properties of the things employed. They know from experience that iodide of ammonium when decomposed gives off iodine, and becomes red; that iodine colours collodion yellow, and starch blue; that nitrate of silver is easily dissolved in water, and in alcohol only with great difficulty; that it freezes at a high temperature, and becomes decom-

posed in one still higher; that it dissolves iodide of silver; that it is reduced by organic substances, &c.

In the building up of this practical knowledge piecemeal, of course many a pint of collodion is lost, many a costly silver bath thrown into the residue pan, and much valuable time frittered away in aimless experiments. The same amount of chemical knowledge they could have acquired in a tenth part of the time and tenth part of the cost by studying photographic chemistry; and this knowledge is readily acquired, for photographic chemistry occupies but a small section in the thick manuals on organic and inorganic chemistry.

#### ON THE PHOTOGRAPHIC TRANSPARENCY OF VARIOUS BODIES, AND ON THE PHOTOGRAPHIC EFFECTS OF METALLIC AND OTHER SPECTRA OBTAINED BY MEANS OF THE ELECTRIC SPARK.

BY W. A. MILLER, M.D., LL.D.\*

11. I have not been able to trace any special connection between the chemical complexity of a substance and its diactinic power. Carbon in its pure form as diamond we regard as an element. In thin slices it transmits portions of the chemical rays of nearly all degrees of refrangibility, though none of the specimens which I examined exhibited any approach to the actinic limpidity of quartz. Phosphorus, on the other hand, though transparent to light in its melted condition, and equally regarded as elementary, appears to be nearly adiactinic, or impermeable to the chemical rays. In many cases the peculiar diactinic or adiactinic action of an element is traceable in its simpler chemical compounds. Thus the simpler combinations of sulphur, such as sulphuretted hydrogen, sulphurous acid gas, bisulphide of carbon, and chloride of sulphur, are all powerful actinic absorbers, while in the more complicated form of sulphuric acid and the sulphates of certain bases, the compounds are highly diactinic. On the other hand, the silicates are much less diactinic than silica in the form of quartz, or the bases which enter into the formation of the silicates; probably this may arise, as Professor Stokes suggests, from the difficulty of obtaining silicates, either natural or artificial, after fusion, perfectly free from iron.

12. No solid or liquid substance that I have as yet tried surpasses rock-crystal in permeability to the rays which excite chemical action. Ice (and water), as well as white fluor-spar, rival it; and pure rock salt approaches it very closely.† White topaz is a little inferior to the preceding bodies in diactinic capacity.

Amongst the various compounds submitted to examination, the fluorides rank first in diactinic power; then follow the chlorides of the metals of the alkaline earths. The bromides of the same metals appear to be less diactinic than the fluorides and chlorides, and this decline in power is still more marked in the case of the iodides. The short spectrum of these last-mentioned salts is interrupted by a well marked absorption-band at a point beyond H, represented on the arbitrary scale at 103.5, beyond which the spectrum is again faintly renewed to 113.5, and then it terminates abruptly. The cyanides appear to be considerably diactinic; but further experiments upon these salts, as well as upon the sulpho cyanides, are desirable. Sulphuric, carbonic, and boric acids furnish salts with the alkalies and alkaline earths, which are also largely diactinic; the phosphates seem to be less so, and the arseniates still less. It is remarkable, that though the sulphates are so diactinic, the sulphites are considerably less so, and the hyposulphites are more opaque than the sulphites. The hydrates of the alkaline earths are also transparent. It is very difficult to obtain the alkaline hydrates perfectly pure; but a solution

\* Continued from page 459.

† A specimen of sea water which had been standing for some months in my laboratory, furnished a result identical with that obtained by using a strong solution of pure chloride of sodium.



of hydrate of soda and one of potash, obtained by precipitation of their respective sulphates with baryta, and concentrated in a silver dish, gave a very fair result in each case.

The diactinic capacity of the tartrates and citrates is less than that of the carbonates. That of the acetates appears to be about the same as that of the tartrates; but the results obtained with the acetates are somewhat uncertain, as it is difficult to procure these salts absolutely free from the empyreumatic products which accompany the acid as it is usually prepared. The oxalates have a low diactinic power.

But the group most remarkable for its absorptive action is formed by the nitrates. Nitric acid, whether dissolved in water or in combination with a metallic oxide, has a specific action in arresting the chemical rays; the less refrangible portion it transmits freely, and then intercepts the spectrum abruptly at the same point, whatever base be united with the acid, provided the base be capable of forming diactinic salts. The chlorates, on the contrary, are strongly diactinic.

13. From the observations above detailed, it appears that the following acids may be considered as possessing high diactinic capacity, viz.: the sulphuric, hydrochloric, hydrofluoric, chloric, carbonic, and boracic acids. Inferior to these are hydrobromic, phosphoric, arsenic, tartaric, citric, acetic and oxalic, hydriodic, sulphurous and hyposulphurous acids, whilst nitric acid is still less diactinic. Chromic acid arrests all the chemical rays; and the presence of a tinge of yellow or green colour in any compound is immediately apparent in a great reduction in the amount of its diactinic power.

14. Among the bases, potash, soda, ammonia, baryta, lime, strontia, magnesia, and alumina are eminently diactinic. Oxides of zinc, mercury, and lead, approach them in power; but coloured bases, like oxide of iron, nickel, cobalt, or copper, are very inferior; and when the salts which they form are green or yellow, they are nearly opaque.

It is remarkable that, notwithstanding the high diactinic quality of silica, none of the different varieties of glass transmit rays extending beyond one-fifth or one-sixth of the range afforded by quartz. This absorptive action is produced by a lamina of glass less than the one-hundredth of an inch in thickness, which cuts off the more refrangible rays almost as completely as a piece of glass of twenty times the thickness. All glass apparatus must therefore be abandoned in these experiments, and apparatus of quartz substituted for them.

15. I had no encouragement in my attempts to construct prisms of other materials than rock-crystal. Rock-salt offers no advantage, and it is too soft and deliquescent to yield prisms or lenses comparable with those of quartz. I did indeed make a considerable number of experiments with a hollow prism furnished with thin quartz sides, and filled with water. But the refractive power of water is less than that of rock-crystal, and its dispersive power is not higher. The addition of pure chloride of sodium till the water is saturated does not materially increase the refractive or dispersive power, whilst it appeared (in a very slight degree, it is true) to diminish the amount of the more refrangible rays; so that, on the whole, I found it more convenient to work with a quartz prism, the double refraction of which, in the position in which I used it, was so slight that it was not a source of any inaccuracy of importance.

(To be continued.)

## THE PRACTICAL PRINTER IN AMERICA X.

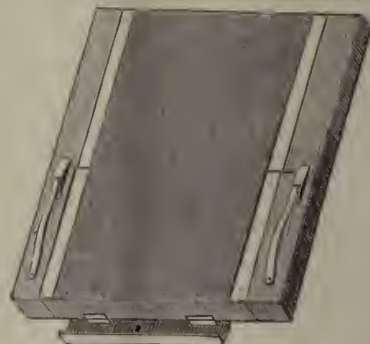
PRINTING-FRAMES, ETC.—(continued).

"*Vignette Printing-Blocks.*—In the making of the vignette printing-blocks, as well as in that of the printing-frames, great care should be given to the materials used. The

wood should be well seasoned, and the lighter it is the better; common pine or basswood answering very well for this purpose. The sizes of these blocks vary, of course, with the different sizes of the impressions on the negatives. For instance, blocks intended for 4-4 negatives should be in proportion to the size that 4-4 negatives are generally made.

"The opening of the wooden printing-blocks should then be in proportion with the impression on the negatives, as has before been said. Now for the 'whole size.' The width of the opening should be 3 to 4 inches, and the length should vary from  $3\frac{1}{2}$  to  $4\frac{1}{2}$  inches. For the next size, larger head, 7 by 9, the width should be from  $3\frac{1}{2}$  to  $4\frac{1}{2}$  inches, and the length from  $4\frac{1}{2}$  to  $5\frac{1}{2}$  inches. For 11 by 14 vignette negatives the width should vary from  $5\frac{3}{4}$  to  $6\frac{3}{4}$ , and the length from  $6\frac{3}{4}$  to  $8\frac{3}{4}$  inches. For 14 by 18 negatives the width should be from  $6\frac{3}{4}$  to  $7\frac{3}{4}$  inches, and the length from 9 to 11 inches.

"The above-stated dimensions answer only for a trifle lighter background than the average; for with a darker one a dark piece of paper would have to be placed at the sides; and if the draperies are dark, then there should also be a piece at the bottom part of the opening, for without it the block, and consequently the halo, would be too large. For a lighter background than the one for which I have given the above dimensions the block, if anything, would be a trifle small. It is impossible, however, to give a fixed rule for the size of the different vignette-blocks, because there are a very great many things to be taken into consideration which renders it almost impossible. The only way is to be guided by good taste. The depth of these vignette-blocks is probably about the most important part of the making of them. The importance of duly considering their depth may be readily seen and answered



by asking ourselves the following question:—What is the object of a deep vignette-block? We answer, To make the halos soft. These blocks should be deep in proportion to the size of the opening of the vignette of the block. Thus, for a 4-4 up to an 8 by 10 size vignette-block the depth should vary from about  $1\frac{1}{4}$  to  $2\frac{1}{4}$  inches. For 11 by 14 vignette-blocks, from  $2\frac{1}{2}$  to  $3\frac{1}{2}$  inches; and for 14 by 18 blocks, from  $3\frac{1}{2}$  to  $4\frac{1}{2}$  inches. This is, however, very changeable, according to a variety of circumstances. For instance:—

"1. The printing-frame may be so made that the vignette board, when tacked to it, would be very much raised, on account of the make of the printing-frame; then, of course, the block should not be quite so deep.

"2. The background of the negative may be very dark, or it may be very light. This refers more to the use of the board when printing than to the making of it; for the negatives should be made for vignetting, rather than the vignette-boards for the negatives; at least, this is so as regards the making allowance for the background of the negatives.

"3. The background may be faulty, so as not to admit of a large halo, but of a smaller, and as soft a one. In that



case we sometimes have to make special blocks, but often there are other blocks, of a different shape, which will, with the aid of one or two 'dodges,' answer very well. There are a number of cases in which the depth of the blocks for the same size negative] should differ considerably.

"The shape of the opening of a vignette-block should be like unto that of an ordinary hen's egg. The narrow end represents the head or upper part of the block, and the wide end the lower part, because there should always be plenty of balance in a vignette, and that can only be obtained by having plenty of the body and a good share of the shoulders in the vignette. In the making of these blocks the opening should be bevelled out quite a distance towards the under part of the block, all of the way from two to four inches, according to the size, so that it will not stop the halo from printing out, and thus occasion a sharp line on the print.

"It is always an important item, in considering the making of wooden vignette-blocks, to have them as light in weight as possible, because, when the blocks are quite heavy, they are bungling to use, and their weight makes them dangerous to the safety of the negatives in more ways than one. The weight, then, of the vignette-blocks, especially those of the larger kinds, can be lessened by tacking thick pasteboard to the under part of the wooden block. In tacking this on, however, a part of the board around the under part of the whole block, and beyond where the bevelling of the opening stops, should be cut below the rest of the surface. The place cut should be from a quarter to three-eighths of an inch wide, and a little deeper than the thickness of the pasteboard which is to be tacked to the block. The pasteboard should then be tacked to this under surface; and the heads of the tacks should be below the level of the real bottom of the block, so that there will be no danger of breaking the negative, on account of the tacks being pressed against the brittle glass on which the negative is made. By paying especial heed to this, it may be of great value to the young beginner, and will perhaps be the means of preventing his breaking more negatives in the future. Of course the advantage of so doing will be and has been recognised by all printers throughout the country. There is no danger whatever to the negative from breakage by the use of vignette-blocks made as has been described, and there is also no excuse for bad vignetting with blocks if the above is carried out.

"It will be seen by the perusal of the above that I have altogether omitted writing anything about a vignette-block smaller than a 'whole-size,' because, for those small sizes, I do not at all believe in using wooden vignette-blocks. Up to 4-4 size any way Waymouth's vignette papers are very superior."

## PROPORTION OF LIGHT AND SHADE.

BY R. J. CHUTE.\*

VERY many of the best photographic productions are defective in the composition of light and shade, producing either extremes of vigour by violent contrast of light and dark, or a sameness of middle tint over the whole that detracts from the value of the lights, and gives the picture an appearance of flatness.

This is a point that has evidently been overlooked, except by the most careful and cultured artists; the consequence has been that the relative proportion of light and shade in a picture has been a matter of chance or haphazard. Now, there are certain rules and conditions that govern this as well as any other department of art, and it is only necessary that they should be well understood, to be applied by the photographer to the works of art he may produce, as

well as by the old masters in the various schools of painting.

Sir Joshua Reynolds gives the following as the result of his observations: "on the works of those artists who appear to have best understood the management of light and shade."

"Titian, Paul Veronese, and Tintoret, were among the first painters who reduced to a system what was before practised without any fixed principle, and consequently neglected occasionally.

"From the Venetian painters Rubens extracted his scheme of composition, which was soon understood and adopted by his countrymen, and extended even to the minor painters of familiar life in the Dutch school.

"When I was at Venice, the method I took to avail myself of their principles was this:—When I observed an extraordinary effect of light and shade in any picture, I took a leaf of my pocket-book, and darkened every part of it in the same gradation of light and shade as the picture, leaving the white paper untouched, to represent light, and this without any attention to the subject or to the drawing of the figures. A few trials of this kind will be sufficient to give the method of their conduct in the management of their lights. After a few experiments, I found the paper blotted nearly alike; their general practice appeared to be, to allow not above a quarter of the picture for the light, including in this portion both the principal and secondary lights; another quarter to be as dark as possible, and the remaining half kept in mezzotint or half shadow.

"Rubens appears to have admitted rather more light than a quarter, and Rembrandt much less, scarce an eighth. By this conduct, Rembrandt's light is extremely brilliant, but it costs too much; the rest of the picture is sacrificed to this one object. That light will certainly appear the brightest which is surrounded with the greatest quantity of shade, supposing equal skill in the artist."

How applicable and instructive are these observations to every photographic artist. As coming from one of the foremost portrait painters of his time, and being careful deductions from the works of some of the most celebrated artists, they are especially worthy of thought and application under the skylight.

The reference to the peculiar style of Rembrandt is more applicable to photographers of to day than to artists of any other period, from the fact that there are so many imitators of this style. "Rembrandt's light is extremely brilliant, but it costs too much." How true in reference to photography! How many brilliant lights we see that have but little value, because other parts have suffered so much in producing them. This method of lighting is an extreme that is only justifiable under certain conditions, or with certain subjects. For light drapery it is unquestionably preferable, as the larger portion is then thrown in the shade, and takes a subdued middle tint much more pleasing than the full glare of light; but for general practice the proportion of light used by the other masters will be more likely to lead to successful results.

The Chicago Exhibition showed that many of our photographers still strive for the "costly lights." The face, with its fine modelling, in most cases, is set in a great expanse of background of almost total blackness. The effect is not pleasing; the eye is soon wearied, and turns from it dissatisfied. A picture seen from such a distance that the details cannot be distinguished will attract attention at once, simply by the proper proportion and balance of light and shade, and, on coming nearer the eye, is captivated by its beauty, and dwells on it with satisfaction and delight.

It might be said that the Rembrandt style had cost too much in effort and failure; but, though the expense may have been great, yet the wonderful advance made in studying, comprehending, and producing light and shade will doubtless compensate for all the sacrifice.

\* Philadelphia Photographer.



# The Photographic News.

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## PHOTOGRAPHIC ENAMELS BY SWAN'S PROCESS.

A CURIOUS illustration of the tendency in persons of an inventive habit of mind to rush to the Patent Office to protect a discovery without first taking the precaution to ascertain whether the same idea had previously occurred to others, and whether any earlier discoverer had given publicity to such idea, has recently come under our notice. Very soon after the publication of Swan's Carbon Process, the very obvious suggestion was made in our pages that by the use of vitreous pigments instead of carbon in the tissue, photographic enamels suitable for burning-in on porcelain tablets would be obtained. Whether that method of producing enamels was tried at that time, we have no knowledge; but a few years ago Mr. William Firling, of Dorchester, sent us some good examples of photographs on porcelain, earthenware, and opal glass, all burnt in, which had been produced by this process, and we published his communication on the subject at the time. For some cause this method has not become popular, and has not, we believe, been extensively practised. A Parisian photographer, M. Paul Marny Godhard, has, however, had sufficient success, or sufficient faith, to induce him to go to what we fear will prove the bootless expense of a patent in this country for precisely the same process. His specification, recently published, runs as follows:—

"By this invention all kinds of drawings, portraits, ornaments, landscapes, and devices, can be obtained and reproduced or copied direct upon porcelain, delph-ware, biscuit, or enamel, and other materials of the same character, by the following means:—I take any kind of drawing, painting, engraving, or positive or negative pictures or subjects produced in the manner commonly practised by photographers according to the carbon process, and print or copy them in the manner practised by photographic artists. The proofs so copied on porcelain or other like materials I then coat or cover with enamel or vitreous glaze, and bake in an oven. And in this manner, and by this means, I obtain direct proofs of drawings, landscapes, and other devices or portraits on porcelain, delph, and other pottery wares.

"And in order to explain this invention more fully, I now proceed to describe the means by which it may be carried into practical effect.

"I take any drawing, landscape, and other device or portrait, and having produced a negative therefrom, I print from this negative the picture or portrait thereon

represented on paper prepared by means of the following bath:—

"First. A solution of glycerine water and colour.

"Second. Pure gelatine, melted in a water bath.

"Third. A solution of bichromate of potash.

"This bath is kept at a temperature of 90 to 100 degrees Fahrenheit. One surface of a sheet of paper is wetted in this bath, and then allowed to dry in a dark room.

"The negative plate on which the desired subject has been photographed is applied on the said prepared paper, and exposed to the light for a suitable space of time in the manner practised by photographers when copying ordinary photographs. When the paper has been sufficiently exposed to the light it is placed in cold water until well soaked. It is then applied on porcelain, delph-ware biscuit, enamel, or other materials of the same character and by means of pressure is made to adhere thereto. The whole is then placed in a warm water bath at about 100 degrees Fahrenheit. In the course of a few minutes the paper will detach itself, leaving the gelatine on the object on which it has been applied. Bichromate of potash having the property of rendering gelatine insoluble after it has been exposed to light, all the parts which have been exposed will be fixed to the porcelain or other material, and the remainder will be detached by the hot water, and thus leave a perfect picture of the negative on the object on which the said picture has been applied.

"I would here remark that mineral colours should be used in these reproductions, as vegetable colours would be destroyed by the heat. I then coat or cover the picture with enamel or vitreous glaze, and bake in an oven.

"Having now described and set forth the nature and object of this invention for 'An Improved Method of Producing and Reproducing Drawings, Devices, and Designs on Porcelain, Delph-ware, and such like Materials,' I would remark, in conclusion, that I hereby declare this invention to consist in, and I claim, the mode of reproducing drawings, devices, and designs on porcelain, delph-ware, and such like materials, substantially as above described and set forth, by means of the carbon process above mentioned."

## PORTRAITISTS' ADDRESSES TO THEIR CUSTOMERS.

CONTINUING our remarks upon this subject in our last, we next come to an American prospectus, which introduces the "Monumental City Palace of Photography" in Baltimore to the public, Mr. Richard Walzl being the proprietor. It is a handsome little pamphlet, arranged in dark green and gold, and it is distinguished by a mark of enterprise we have seen adopted in several similar American prospectuses, namely, a fine card portrait prettily mounted as frontispiece; and as the pamphlet is intended for gratuitous distribution, this picture must alone form a serious item in the cost. After some preliminary remarks addressed to the public, in which the proprietor states that, before building his "Photographic Art Palace," he made an extensive tour through the States and Canadas to visit all accessible studios, and so adopt the best points of all, he states that his aim has been to establish not simply a place where people may come only on business, but "to render his reception rooms cosy, homelike, cheerful, and comfortable, where visitors may find sufficient attractions to spend a few pleasant hours;" and visitors are emphatically informed that they "are always welcome, whether they desire to sit for pictures or not."

We have next an essay on photography, giving a sketch of its origin, rise, and progress, after which the pamphlet is chiefly devoted to points the entire silence on which we noted as a characteristic of Messrs. Robinson and Cherrill's pamphlet. Mr. Walzl does not omit to advise the sitter



most comprehensively on what he shrewdly styles "things you ought to know." First we have:—

*"When and How to Come.*—A clear day is not strictly necessary, as many suppose; on the contrary, a day when those light fleecy clouds are floating through the air is generally considered the most favourable. However, with the modern constructed sky-light which is found in our first-class establishments, any day except a very dark, cloudy, or stormy one will answer. When you intend to have your picture taken, do not come with only 'five minutes to spare,' or give your artist to understand you are 'in a great hurry.' It will not gratify him in the least, and it will not (in his estimation) be sufficient reason for him to slight some one else, but, like all others, you will have to wait until your turn comes. If you are on a visit, and desire to sit for a picture while in the place you may be visiting, do not wait until the day before you are to return to your home, but come when you have more time. If you come the next morning after being out nearly all night at a party or other similar places of entertainment, no matter how pleasant an expression you may assume for the occasion, tell-tale photography will let peep out in your photograph the fact that 'tired nature's sweet restorer' has been robbed. Remember the face is a mirror of the mind. Come when you are calm and in excellent spirits; come prepared to wait a few minutes cheerfully; and our word for it, the animated and pleasing expression which may thus be secured under such circumstances will be far better than a dozen re-sittings under any other. No matter how excellent the photography may be in all other respects, unless you come with perfect confidence in your artist's abilities, the expression will be unnatural, thereby destroying the chief beauty of the picture. Let as few of your friends accompany you as possible, as a crowd only results in confusion, and often makes it impossible for the artist to secure a satisfactory picture. When convenient, it is preferable to examine specimens, and select such styles as you desire, a day or so before sitting. When this is done, you will, if promptly on time, avoid being delayed."

Some judicious hints follow on the very important point—

*"How to Dress.*—When anything more than a vignette picture is desired, it is very essential that a suitable selection from your wardrobe is made of such drapery and wrappings as will be as much as possible in characteristic keeping with the style of a picture to be taken. Dressing the hair in an unusual style, simply because you are to have your picture taken, is generally sure not to please you when you see your picture. When you are aware 'how' ribbons of different colours photograph, the folly of wearing such as will take white, or very light, in dressing or arranging the hair, will be readily understood. A single flower, or a small spray of them, arranged with taste, is always more effective than ribbons. It is not always expedient to follow the fashionable mode of dressing the hair by all ladies who intend to have their photographs taken, for the emphatic reason that photographs are sometimes 'horribly correct.' Ladies with broad faces should have the hair arranged as much as possible on top of the head; while those of angular faces should always manage to dress their hair on the side with 'puffs,' frizzes, or curls. If the neck is deemed too long, a few graceful drooping curls may be so artistically arranged as to completely overcome the objection or fault. Never use too many curls, for in a picture it causes the head to appear entirely out of proportion to the body (which is really the case).

"Avoid, when arranging the hair, all abrupt angles; they appear very ungraceful in a picture. The materials with which the most graceful drapery may be secured, and which appear very rich in the photograph, are silks, satins, reps, silk poplins, moire antiques, &c. Pale pink, light blue, lilac, lavender, and light purple colours always

photograph very light; but such colours may be worn to advantage when pictures are desired with a dark background. The following colours in the photograph come out a very pretty shade of light grey, and can be so artistically managed as to excellently harmonize with most any complexion:—Navy blue, fawn, dove, crimson, rose, pink, light green, plum, dark purple, and magenta. The following colours photograph quite dark, and appear very rich in the picture:—Light brown, orange, yellow, claret, scarlet, dark buff, and leather colours. The colours which take still darker and nearly black are the dark green, cherry, browns, dark orange, wine, and golden brown colours. Nothing photographs better than heavy black silk. Lace work of all descriptions can always be introduced with most pleasing effects. Avoid all white drapery of an opaque nature. The only white drapery of which good photographs may be secured are such goods as Swiss muslin, tulle, &c. With such a black lace shawl may be used very effectively. Always avoid prominent striped or plaid goods, which do not yield pleasing pictures. Black velvet is not suitable for persons of light complexion. Blondes should dress in something lighter than brunettes. Jewellery is not recommended only to a slight extent. Long gold chains generally come out sufficiently light to make an unartistic contrast.

"Never powder the face unless the artist directs or advises it. People often wonder how it is that actresses, as a general rule, always make excellent pictures. It is an erroneous supposition to attribute this to their superior natural attractions. When they come it is with a purpose. They always bring with them a selection of toilet requisites, which they give the artist permission to judge of which produces the most artistic harmony in the picture. They are calm, self-possessed, and have full confidence that the artist is competent.

*"Gentlemen's Dress.*—As a general rule, black is preferable, although it in many instances somewhat depends upon the style of picture desired. The gentlemen may glean some useful information as to how their 'stunning' necktie and scarfs will photograph by reading the remarks on how the different colours photograph. If you wet or oil the hair too much, it will make a gloss on it that will appear white in the picture. Dress the hair as loose as possible; do not comb it down too smooth."

The next subject, the position of the sitter, belongs more to the artist than to his customer; but some good hints are given to the latter, who is advised to be tractable and obedient.

*"Position.*—This is one of the very important stages of the operation. Here the artist's true ability and knowledge of art are thoroughly tested. For the sitters to dictate and tell the artist how to 'fix' them, is virtually declaring him not to be an artist, and exhibits the fact that no confidence is had in the artist's merits. A moment's consideration on the part of the sitters, and they must certainly be aware of the utter absurdity and unwise course of such procedure. It is the artist who takes the picture, and his practised eye can more readily and truthfully determine which may be the most favourable position; and it is certainly just as much to his interest to secure an artistic picture of you as you are anxious to get one. While, in comparison, you have nothing at stake, he has his reputation as an artist, and, if not interfered with, will always maintain it. The head-rest is strictly necessary; no matter how certain you are that you do not need it, it is impossible to make good photographs without it is used. The pulsations of the heart are sufficient to move the head (if the rest is not in use) enough to destroy the pleasing and artistic effect of the picture. Please do not, when the artist has, after no little study, arranged you in a position to suit his taste, move or change about, and thereby spoil it. Avoid, just about the time the exposure is to commence, the unnecessary evil of giving yourself any 'finishing touches to your



collar, your curls, or, in fact, anything, for perhaps the least movement of the kind will destroy the position entirely, which will necessitate the accomplishment of the work again, and in the second trial under such circumstances, neither the artist nor the sitter feel the same degree of interest in the result. The artist becomes embarrassed at your lack of confidence."

On the subject of expression some good remarks follow, and the sitter is urged to avoid all effort and anxiety about the portrait. Mr. Walz says:—

"*Expression.*—This is the all-important event to insure success. Expression is the life of the picture—the likeness in its unassumed and most correct form. When this is therefore understood, the sitter can appreciate the importance and necessity of coming in a cheerful and happy mood. It is impossible for the artist to coax out in the picture an expression that was not on the face of the sitter. If the sitters be tired and worried in mind, no matter how 'nice' they may look when sitting, it will plainly be seen in the photograph that the mind is portrayed in the face. The proper way is to feel perfectly natural. Do not try to be anything but yourself. Avoid, when sitting, this unnatural way that many have of looking with all your might. If you are thinking about how you look, and are 'so afraid it won't be good,' you can rest assured there will be anxiety pictured in your face when you see the proof. The proper way is to sit down in a cheerful mood, letting the mind dwell on some pleasant theme—something that will bring your whole-souled nature out in your expression. Keep the eyes steady on the object as directed, winking as under ordinary circumstances. Do not strain the eyes in the least; it is not necessary. It has been our aim to have the appointments and surroundings of our rooms of such a character as to engender pleasing thoughts, and help the sitter to feel at home, by which means the artist is greatly assisted in securing that easy, natural, characteristic expression, which it is his great pride to reproduce."

A capital idea follows, which may be worth adopting by many. One day in the week is set aside for taking children. Every photographer knows how sadly the business of the day is interrupted by the necessity of taking one or more children whilst other customers are waiting; but also knows that it is important not to refuse taking children if the patronage of their parents be worth retaining. Here is the solution of the difficulty:—

"*The Children's Day—Saturday.*—After careful consideration, we conclude, for the mutual good of all parties, that it is best to have a special day in each week for taking children's portraits, when special pains and attention will be devoted to them. Generally adult patrons dislike to be kept waiting by children, who, in many instances, have a faculty of not sitting still; and the time occupied in trying to secure their picture causes the artist to lose customers, when in many instances he fails to secure a picture of the restless little one, and consequently, after having lost a paying customer, has in the case of the little one his labour for his pains. It will be much more pleasant and agreeable, therefore, to have a definite understanding. The little ones on their day will be delayed but a short time, when perhaps, on any other day, before their turn would come, they would get restless, tired out, and sleepy. It will be understood, however, that the 'little ones' referred to means children under five years of age; all over that age can come at any time.

"Young children should always be dressed in white or very light coloured goods, and in all cases should be brought to the artist's rooms before noon. In this age of civilization it is not now deemed necessary that the infant prodigy should be, relatively speaking, accompanied by its parents, grandmother, and relations generally. The mother and nurse are, now-a-days, supposed to be sufficient for the occasion. The artist has more experience in

taking pictures of babies than you have, so it is best to let him take the picture. If the youngster's picture is not secure after two trials, the artist can judge whether it is best to renew the trial, or to come again another time. Do not attempt to force the child to sit when it is determined not to. It is a mistaken idea to allow the children to have 'sweet things,' or to give them toys to hold, as both attract their attention, and are therefore only a hindrance instead of an assistance. Please be reasonable, and do not expect impossibilities in children's pictures. It is impossible to make a standing picture of a child that cannot walk, or of one under five years of age. If it were possible, it would not be natural nor childlike. Better always let the artist arrange the child properly. Groups of children under five years of age cannot be satisfactorily made. In photographing infants, the face is what the artist strives to reproduce; and as, on account of the peculiar restlessness generally exhibited, the time of exposure is much shortened, therefore it is impossible to show the hands and feet as perfect as though they were kept still. At all times, however, the best that can possibly be accomplished will be cheerfully done. It is impossible to secure a picture of a sick child. Children should be brought on bright, clear days only."

A series of short chapters on miscellaneous points follow, the first making the stern announcement that "photographs must be paid for when ordered." This is a very debatable matter. Some photographers insist on the wisdom and convenience of entering in a book details of order as soon as a style has been selected, and a receipt made out as the unmistakable hint that the cash must then be paid. Others prefer to take the order after the sitter has seen and is well pleased with the portrait. Here are Mr. Walz's remarks on this subject:—

"*Photographs must be Paid for when Ordered.*—This is an established rule and custom prevalent among all leading establishments. It is done to shield the artist from imposition by those who are impulsive (?), such as sit for their pictures when in a certain mood, just for fun, and, if they are not paid for, never call for them. This is no fun to the artist. Another class insist on seeing the negative: it may be a very excellent one; but they, not being capable of judging from the negative, will not believe the artist, but deem their judgment more wise than his, and think to themselves, 'Well, as long as it is not paid for, I won't call for it.' Others can see, therefore, the necessity of this rule, and may also understand, because it is necessary to comply with the rules of the establishment, that their honour is not the least questioned. On large photographs and large coloured work, in amount of \$25 and over, it will only be necessary to advance one-half the price of the work, and the balance, cash on delivery. A proof will be made and shown when desired. In no case will we allow an inferior picture to leave the establishment.

"Please do not hurry us in the finishing of your pictures. They will be finished just as rapidly as it is possible for them to be, in a manner consistent with the production of artistic results. It generally requires from five to seven days, and in cloudy weather a day or two longer. All can be finished as well as a few at the same time, therefore do not expect 'some of them a little sooner.'

"Positively no duplicate prints will be delivered, from any negative, to any parties but the sitter, unless we have verbal or written consent from the proper authority to do so.

"No prints will be used for specimens without permission. All imperfect prints, or any printed over the original order, are always destroyed.

"Please preserve your check for future reference, and, in ordering duplicates, the number of the check is all that is required to give us."

In the chapters which follow, the various kinds of work done are detailed, and frames, albums, and other goods



described. Curiously enough, no list of prices is given, although repeated allusion to the prices is made. The pamphlet closes with a few specially emphasised paragraphs as to the rules of the establishment, one being that the clergy will be furnished with plain photographs at half the price charged to the ordinary public, and that no sittings will, under any circumstances, be made on Sundays—an announcement which, we should hope, it would not, as a rule, be necessary to publish.

### FRENCH CORRESPONDENCE.

M. LE COMTE LUDOVICO DE COURTEN has just forwarded me an interesting communication, which I have much pleasure in making known to your readers, for while the letter contains information more particularly interesting to photo-lithographers, it nevertheless treats of matters which will be useful to all.

When engaged upon the reproduction of engravings—or, to be more precise, of line drawings—it is often found that two difficulties present themselves; either there is too much transparency in the cliché, or there is a foggy appearance, more or less marked, over the whole plate. The first defect is due to a pose which has been too short (that is to say, the light has not acted sufficiently upon the collodion plate); the second defect comes from intensifying the plate too much: both, of course, have an injurious action upon the result.

M. de Courten says that works hitherto published give but very vague directions upon the subject, and often erroneous ones. He thinks that as every day the processes of printing with greasy ink will become more and more vulgarised, operators will be only too glad to be informed how they may be able to secure a clear and transparent cliché with a ground sufficiently opaque to secure a transfer upon stone.

M. de Courten has taken up the two processes indicated by M. Geymet, and it is by means of the first, modified in a very happy manner, that he has been enabled to obtain a very successful result. He rejects altogether the employment of hydrosulphate of ammonia, whose violent and irregular action has almost always the effect of spoiling the best plates; besides, it has an injurious action by volatilizing, and thus damaging other preparations in the laboratory.

My ingenious correspondent thus proceeds: he prepares two solutions as follows:—

No. 1.—Alcohol	...	...	...	5 cubic cents.
Bichloride of mercury	...	...	...	2 grammes

The bichloride of mercury is, in the first place, finely powdered, then the alcohol is added, and, after the solution is pretty well complete, there is added one hundred cubic centimetres of water.

No. 2.—Iodide of cadmium...	...	...	2 grammes
Water	...	...	100 cubic cents.

The first solution may be employed in the form of a bath; the second is poured from a lipped glass.

The cliché, having been developed by means of sulphate of iron and well washed, presents an iodide film of a most limpid character in the lines, and is then fixed in a five-and-twenty per cent. hyposulphite of soda bath. Sometimes the negative appears so weak that one feels tempted to reject it as unserviceable; but this weakness is of little importance. Nevertheless, if deemed necessary, after having withdrawn the cliché from the soda bath and washed it thoroughly, it may be intensified by pouring over it some more of the solution of iron which has served for development, adding a few drops of silver to it previously. It is sufficient if the film has obtained a slight increase in intensity. This small addition of silver aids considerably the precipitation of the mercury.

According to M. de Courten the employment of pyrogallie acid should be rejected, for its action takes place

principally upon the transparent portions; these become covered with a precipitate which injures the cliché beyond all remedy. In any case, before the cliché is plunged into the bichloride solution the plate must be freed from every soluble reagent, and well drained. It is immersed face upwards, and the bath is shaken so that the solution covers the film in wave-like motions.

The operator has a certain latitude for intensifying. With a rapid action he obtains a dark grey, and afterwards a black, precipitate, very agreeable to the eye; if the immersion is longer, then the film becomes of a whitish-grey, and the cliché has, subsequently, a yellow ground, which is very impermeable to the light. M. Courten, however, says that the lines are sometimes covered with the precipitate in this case.

On the exit of the plate from the bichloride solution it is washed with extreme care, and then intensified by covering it with a solution of iodide of cadmium, which is applied several times. Almost immediately the film, viewed by reflection, assumes a yellowish-white tint, and the lines have an extraordinary transparency. Seen by transmitted light, the ground is opaque and of a velvet aspect.

The essential condition of success is for all the bichloride of mercury to be converted into proto-iodide of mercury; this change is effected when the back of the negative, seen by reflection, presents a uniform green tint, without any trace of grey. M. de Courten insists upon this point, which he states to be of the highest importance.

The operation ends with a thorough washing in plenty of water, which one need not fear to prolong; afterwards the plate is covered with a solution of gum made up of:—

Gum arabic	...	...	...	12 grammes
Water	...	...	...	100 cubic cents.

M. de Courten has tried the iodide of potassium, which M. Geymet recommends in his manual, but he has found iodide of cadmium preferable. Iodide of potassium gives less intensity, and moreover it gives an unequal film with yellow streaks. This is a grave defect, which is not met with when iodide of cadmium is employed, which forms, no doubt, a more stable metallic compound.

The cost of iodide of cadmium is higher than that of iodide of potassium, but M. de Courten thinks this of secondary importance in face of more successful results. My correspondent ends his interesting communication in calling to mind the fact, that in the event of poisoning by means of bichloride of mercury, the best antidotes are white of egg, which combines with the mercurial salt, and forms an insoluble compound; and proto-sulphate of iron diluted with water, which forms, with bichloride of mercury, bisulphide of mercury and proto-chloride of iron, which have no injurious action upon the human organization.

A civil engineer, M. Van Tenard, has designed, and intends to bring out commercially, an enlarging apparatus suitable both for painters and photographers; it is, in fact, an instrument for securing enlargement of opaque objects.

A simple carte-de-visite placed in the apparatus is reproduced most accurately upon a screen placed parallel to the image, according as the screen is made more near or distant. The light of an ordinary oil lamp suffices for the production of a perfectly clear image.

To secure a photograph upon glass or paper, it is sufficient to replace the screen either by a sensitive plate, or a sheet of paper prepared with iodide of silver. Without in any way disarranging the disposition of the apparatus, the ordinary lamp may be replaced by a magnesium lamp, and by means of this photogenic light a reproduction of the size of nature may be secured.

In the same way, ordinary photographic clichés may be enlarged. A painter would probably be content with an enlarged image thrown upon the screen, from which he might make his sketch, either in crayon or chalk, to form a basis for a painting.

Electric or oxyhydrogen light may also be applied



in this instrument. M. Hermann, one of our most distinguished photographic portraitists, who has promised to bring the apparatus to the notice of the public, has announced that he will give daily demonstrations with the instrument in his studio. I propose paying him a visit, and will give an account of my experience in one of my next letters, and describe the practical details of the instrument.

At the last meeting of the Photographic Society of Marseilles, a member having asked whether silver prints fixed by means of sulphocyanide of potassium instead of hyposulphite of soda could rival in permanency photographs produced in carbon or fatty ink, M. Leon Vidal replied to the question by referring to a very simple experiment; it is sufficient to plunge the point of a needle into water feebly acidified with nitric, muriatic, or sulphuric acid, and to prick the carbon and sulphocyanide prints, when there is formed on the latter a white spot, while the former will remain intact. It is evident, therefore, that photographs with a metallic basis are subject to alterations which result from the modifiable conditions under which they are produced. The moisture of the air, the traces of carbon, sulphur, and alkaline or acid matter, that they contain, and the action even of the mounting material employed, are all prone to bring about an oxidation of the prints, thus leading to their destruction. All such causes of change are, however, without effect upon pigment prints.

ERNEST LACAN.

## BITS FROM THE STUDIO.

BY GEORGE CROUGHTON.

### ABOUT PRINTING.

Mr. HEARN (the "Practical Printer in America") recommends drying the sensitive paper quickly; and a correspondent asks, in your page of "Notes and Queries," if this is in accordance with the experience of photographers in this country. I, for one, cannot agree with him in this respect, having found it impossible to get the paper to lie upon the negative without wrinkles, which no amount of pressure could flatten. I am daily using whole sheets of albumenized paper for enlargements, and can speak from experience, that unless the paper is allowed to dry spontaneously, it will wrinkle or cockle, and will not come into perfect contact with the negative.

The experience of English photographers is also asked, in the same page, as to the advantage of fuming the paper. When there is so much good testimony in its favour, it is with some diffidence that I state my experience of its effects. I have found great uncertainty in its use; sometimes it would appear to produce prints with greater brilliancy after toning, but they have invariably taken a turn for the worse in the hypo fixing bath; at another they have been stained by unequal action of the toning. It may be that the bath I use does not agree with the fuming, and as I can get as brilliant prints with this toning bath as any of the fumed prints I have seen, I do not see the advantage of the extra trouble. The formula for making the toning bath I use has been frequently published, but without proper directions for use. It is the most economical bath I know or have heard of, as I can tone four sheets of paper with one grain of gold. As a good and reliable toning bath is a desideratum, I append the formula and working directions. Break a fifteen-grain tube of chloride of gold in a two-ounce bottle of distilled water; add to it fifteen grains of chloride of lime. Every drachm of this will of course contain somewhat less than a grain of chloride of gold. If I have four sheets of paper to tone, I take one drachm of this and put it into a pint jug with a pinch of precipitated chalk, and then fill up with boiling water. It is a point of great importance that the water should be boiling when poured upon the solution of gold and lime. When cold, this is ready for use.

Now comes the most important part of the whole

proceedings: *put your prints into the toning without any preliminary washing whatever.* Do not over-tone, stop just short of the tone you want, and transfer to a dish of water made just salt to the taste with common salt; this prevents the toning being continued, as it would be without the salt. When all are toned (and it tones very quickly), give the prints fresh water (without salt), and transfer to the usual hypo fixing (I use one pound to two quarts of water). The advantages I find in the use of this toning are brilliant purple shades with a warm flesh like tint; in the middle tints it preserves the most delicate demi-tints of the picture, and saves both trouble and waste, as all the chloride of silver is saved in the toning, so that you have all saved in a pint instead of having to keep two or three washing waters. I have used it for something like ten years, and shall never use any other.

The subject of washing prints after the hypo is one on which great difference of opinion is expressed. My experience is in favour of short washing, but with thorough changes of water. I wash my large prints (19 by 14) in flat wood trays three inches deep, twenty-four inches long, by eighteen inches wide. I have three of these, and the prints are transferred from the hypo, after thorough draining, to one of these, which has been filled with water, and left for about five minutes. I have two canvases upon frames, bought at an artist's colourman's, prepared for painting upon. One is put under a tap, so that the water falls upon the centre. Upon this the prints are placed one at a time, with the water running upon them, and well sponged back and front, and placed upon the second canvas (which is standing on end) to drain. They drain thoroughly, and are then transferred to tray No. 2, which is filled with clean water, and let remain for the same length of time as in No. 1, and then the spouging and washing under the tap are repeated. When that has been done four times, I am quite confident all the hypo that can be got out is out of them, and they are blotted and mounted right away, for I do not believe in long soaking, which takes all the brilliancy out of the pictures, and rots the sizing.

I suppose Mr. Hearn has several chapters to come upon printing dodges, for it is there that English printers fail as a rule. There are, of course, exceptions, but, as a rule, printers take very little interest in producing the best possible results from the negatives given them to print. "If the negative will not produce a good result by simply putting the sensitized paper upon it and keeping it out in the light till it is printed dark enough, it is the fault of the operator, and no business of his." This is the argument of the average printer. But the printer who takes an artistic interest in his work is up to every dodge to improve upon indifferent negatives: tinting his paper before putting it upon a hard negative; covering a too soft one with matt varnish or tracing paper, and increasing the brilliancy of the resulting print by thickening upon the lights with pencil or colour, and clearing out the shadows by scraping away the varnish or gumming the tracing paper; cutting masks, and covering up some parts while others darken; and the thousand and one little dodges that suggest themselves to an intelligent and educated taste. "Ah! but," said a friend, "where will you find a printer paid to take all that trouble and interest in his work? When you can get the masters themselves to appreciate such work, and encourage a printer in it, you may hope to see more of it done; but, as a rule, printers are miserably under paid. Where do you find a printer getting the same salary as an operator? Yet he ought to be the equal of the operator in artistic taste and judgment, to be able in the printing to correct his faults or shortcomings, and therefore he ought, in common justice, to be on an equality with him, in both position in the establishment and in regard to salary; but while masters think that any boy or girl will do for printing, you will not find a man with any pretension to artistic taste or skill remain in the position of printer." I am afraid my friend is right.



## Correspondence.

## PHOTO-TYPE PRINTING.

SIR,—In your last issue you say, with much truth, that it is "singular that in this country, where so many clever mechanical methods have originated, photo-type printing is comparatively unknown." Much of this is possibly owing to the "patent bogle," many ingenious persons not caring to run the risk of the trouble and annoyance of a controversy, or, worse still, a law bill. If the small printing presses to be used with type, and printing the size of small note paper, have been found to answer so well, possibly some one with time and opportunity for experiment might hit on a plan for small *litho* presses, for small subjects in line; or an arrangement for small gelatine blocks. All this would be of service to many engaged in the arts, in schools, &c., &c., as well as to photographers in general.—  
Yours, &c.,  
OBSERVER.

## Proceedings of Societies.

## EDINBURGH PHOTOGRAPHIC SOCIETY.

THE last outdoor meeting of the season was held last week, when the members, taking advantage of the newly opened branch line to Balerno, proceeded to Collinton, and wrought their way up to Curry.

There is no city with which we are acquainted that contains within a circle of ten miles so much food for the camera; and the construction of this railway has opened up one more exceedingly beautiful locality. The new line branches off the Caledonian a little beyond Slateford, and after crossing the Edinburgh and Glasgow Canal, runs close by the water of Leith, which it crosses and re-crosses nearly a score of times, through a continuation of most picturesque and varied bits of landscape, including numerous waterfalls, fine bridges—both old and new—quaint old mills, with their sleepy-looking cauld, reflecting in all its beauty the autumn-tinted foliage which gives such a charm to the tree-clad country at the present time; and last—not least—many of the cosy-looking cottages, now so fast disappearing from the scene. We would advise those who intend to visit and photograph the beautiful glen, to go by rail to Balerno, and then walk back along the line; and can assure them that if they get a favourable day, and have a couple of dozen reliable dry plates, they may easily bring home a couple of dozen of really excellent pictures. In connection with the excursion, the two secretaries, along with two friends, proceeded on a prospecting trip on the previous Tuesday; and, acting on their advice, the party came off at Collinton, intending to work their way up to Curry. The first picture lay at the opposite end of the tunnel, which is close to the station, and through which they had just passed; but the obliging station-master not only gave the necessary permission, but kindly furnished them with a lamp to guide their footsteps along the somewhat uneven path.

On emerging from the darkness of the tunnel, the view which confronted them was really grand—a miniature Killiecrankie, in fact—possessing the advantage of being easily included in one picture, and consisting of two finely foliage-covered hills, the various tints of which were admirably rendered by unclouded sunshine, and undisturbed by a breath of wind; while through the valley ran—or rather tumbled—the river in numerous little falls, the white spray from which glittered in the light like diamonds. Here the cameras were unpacked, and in a short time all were at work. In consequence of many of the members being out of town, there were less than the usual number present, but it was noticed as a somewhat unusual fact that everyone present had a camera, and also that all the plates were by the beer and albumen modification.

Although the light was good, there was one side of the valley in shade, and in consequence rather long exposures were given; they ranged, in fact, from ten to thirty seconds. The next halt was made at a point immediately in front of the station, where there was an old willow-tree overhanging a deep pool, which, with its surroundings, formed too great a temptation to be passed without an attempt to transfer it to the collodion film. This was accordingly done, and again the party were on the move.

In this way the journey to Curry was made, amidst such fun and enjoyment as we believe can only be realized by votaries of

the camera. By the time Curry was reached the sun had gone down, but there were two pictures they were all anxious to get, a group of rose-clad cottages with thatched roofs, and a fine combination of an old tower, a bridge, and a ruined cottage. The former got forty minutes, and the latter a whole hour, in consequence of the badness of the light.

The cameras were then put up, and an adjournment to the hotel made, where Mrs. Mackenzie had ready the usual wind up—a tea dinner—to which, of course, full justice was done.

After removal of the cloth, the chair was (in the absence of the president) taken by Dr. John Nicol, and the usual formal business was transacted, by which time the return was due, and the party started on the homeward journey, showering blessings on the head of the Caledonian Railway Company for opening up such a rich field of glorious work for the landscapist, and resolving to return to the ground at the earliest opportunity. We may add, that out of the whole day's work, there were only three failures.

## Talk in the Studio.

A COPYRIGHT QUESTION.—Mrs. De la Rue, art dealer, 30, Museum Street, Bloomsbury, was summoned before Mr. Vaughan for infringing the copyright of Mr. Arthur Lucas, the well-known photographer, in a certain photograph entitled "On the Track." Mr. George Lewis, jun., appeared for the complainant, and Mr. J. L. Longstaffe appeared for the defendant. It appeared that the picture in question is one painted by Mr. Henry Benjamin Roberts, the member of the Institute of Painters in Water Colours in Pall Mall. The copyright of the picture was sold to Mr. Lucas, and he has since registered it. Some photographs taken by him of the picture have been published. From an advertisement it was discovered that the defendant was selling some scrap-photos, entitled "On the Track." One of them was bought, and it proved to be a photograph of a bad copy from Mr. Roberts' picture. Mr. Lewis called Mr. Roberts, who said that he had painted the picture for the Royal Academy. It was there exhibited on the "line," and was much admired by all. He sold the copyright to Mr. Lucas. These photographs which had been sold by the defendant were evidently photographs of a very bad copy of his picture. They were calculated to do him very great injury. Cross-examined by Mr. Longstaffe: He did not copy his picture from any French artist's painting. It was drawn from real models, and the dresses and arms had been lent him from a club of which he was a member. Mr. Longstaffe, for the defendant, said that after this evidence he had made an arrangement with Mr. Lewis, by which the summons would be withdrawn. His client had bought a picture in France as original. She believed it to have been painted by a man named Le Brun. The picture had been photographed, and she had sold copies for some months now in the firm belief that the picture she bought in Paris was original, and that there was no other like it in the world. After what Mr. Roberts said, however, it was evident that it must have been a copy she bought in Paris, and she was therefore quite ready to give up the negative, and promise not to sell any more of the copies. Mr. Vaughan said this was no doubt the honourable course to take. The copies sold by Mrs. De la Rue were evidently calculated to do Mr. Roberts an injury, as they were copies of a very inferior picture to that of Mr. Roberts. In the event of the negative being given up the summons might be withdrawn.

MR. LOUIS SEEBOHM, one of the chief photographers who embarked on the *Swatara* in June last as a member of the American transit of Venus expedition, died at Bahia on July 22. He had been extremely ill during the voyage, and was ordered home by the medical officer of the vessel, but died of fever before he could be removed.—*Nature*.

THE APPROACHING TRANSIT OF VENUS.—The scientific journals and the members of learned bodies are at present very much engaged in considering matters connected with the transit of Venus over the sun, which will take place on Tuesday the 9th of December next, and for the observation of which her Majesty's Government have voted a sum of £25,000, supplemented by grants from the governments of France, Germany, Russia, and the United States. There will be many stations for observation, those for the English observers probably being the island of Woahoo, off the East Coast of Australia, Kerguelen's



Island, and Rodriguez Island, in the South Indian Ocean, at Auckland, New Zealand, and at Alexandria. It is thought that Russia will occupy about thirty stations, while France, Germany, and the United States will furnish about twelve each. It appears that the observation of the transit of 1769 was due principally to Dr. Halley, who first suggested this mode of computing the distance of the sun from the earth in 1716. The transit of Venus, which will occur on the 9th of December, will not be visible in this country; but it will be distinctly seen in New Zealand, Australia, the East Indian Archipelago, and various parts of Southern Asia. It appears that the transit of Venus which was observed by Captain Cook's expedition at Otaheite in 1769 led to the calculation that the distance of the sun from the earth was 95,300,000 miles. It has since been considered—better astronomical instruments having come into use—that the distance is 91,750,000. The next transit of Venus (after that of 1874) will be on December 6th, 1882, and as follows:—June 7, 2004; June 5, 2012; December 10, 2117; December 8, 2125; June 11, 2217; June 8, 2255; December 12, 2360; December 10, 2368. In reference to Lord Lindsay's expedition to the Mauritius, to which we referred last week, the Earl of Crawford writes as follows to *The Times*:—"I have just read in a leading article of *The Times* of last Wednesday a very flattering reference to the expedition to the Mauritius. It is my son, Lord Lindsay, who has organized this expedition and undertaken its duties personally, his devotion to science, and to astronomy in particular, being as determined as my own has been to letters. He is now on his way to the Mauritius, *via* the Cape of Good Hope, but his able assistant, Mr. David Gill, has already arrived there *via* Aden, and is making the preliminary arrangements for the arrival of the instruments, which Lord Lindsay is taking out in his yacht. Mr. Gill has received most efficient and kind assistance from the Surveyor-General, from Mr. Meldrum, of the Observatory, and especially from M. de Chasales, a venerable French gentleman, one of the old proprietors, who lives in a sort of patriarchal state in the north-east district of the island, where he has large possessions. The observatory has been fixed at Belmont, a property belonging to this gentleman, on a site presenting very favourable conditions. M. de Chasales offered in the first instance the Isle d'Ambre, the scene of the well-known romance of *Paul and Virginia*, as the site; but various considerations, including the difficulty of access for landing the instruments, rendered that at Belmont more advantageous."

**PHOTOGRAPHIC IRRADIATION.**—Mr. Stillman, writing to *Nature* from New York, referring to the discussion on blurring or irradiation, says:—"In *Nature* vol. x. p. 245, Mr. W. C. Crofts adds his experience to those previously given in your journal, and gives his conclusion as opposed to that of Mr. Aitken. Like most conclusions based on incomplete evidence, it does not conclude anything. The fact is as I have stated it in my previous note on the subject, and when I return to England I will be most happy to demonstrate it to anyone who cares to examine the question thoroughly. Mr. Crofts' experience with the Liverpool dry plates agrees with my own, for these plates are prepared with a pyroxyline which gives a minimum of irradiation when backed, and give the best quality of image for scientific purposes attainable with a bromide film; but certain qualities of pyroxyline prepared in precisely the same way will show irradiation that nothing can cure, even when used for making transparencies by contact, where, of course, there can be no question of influence of any optical defects. The unquestionable fact that a collodio-albumen film acts in so totally different a manner from one of bromized collodion should prove that the lens has next to nothing to do with it. My conclusions may be very imperfect, but so far as they go they are definite, and are drawn, not from two or three, but from hundreds of experiments with all kinds of dry plates and many different samples of pyroxyline, and whatever they may be worth they fully support Mr. Aitken's views."

## To Correspondents.

**A LITTLE MAN.**—Add your permanganate very gradually, and in tiny drops, for there should be but the faintest tinge perceptible. Filter your bath afterwards, and test with litmus paper; if too acid, add a little fresh silver solution, but it will scarcely require more acid. We fear you have added too much permanganate.

**A YOUNG DISCIPLE.**—When you add the ether to the thick collodion, do you shake the mixture up well? If you do, and still the collodion sets too slowly, there is no help for you. Ether sometimes contains water, and if you have been adding two or three doses of ether, the water in these may still be in the collodion; in this case the latter would be slightly turbid.

**A. B.**—The defects may be due to methylated spirit, if the latter is rubbed over the photograph; but try a sensitizing bath rather stronger than usual, for the difficulty may proceed from the albumen becoming dissolved from the surface of the paper. It seems as if fibres on the surface of the paper, which were matted down in the first place, have shifted from their original position, owing to the surface being too severely handled. Hypo would scarcely produce the defects.

**F. J. DAURAN.**—The Woodbury process is patented, and you must obtain permission to work from the Photo-Relief Company. When the intaglio has been secured on gelatine, this is hardened in alum, and an impress taken of it upon an antimonial lead plate, which then becomes the printing block. A little pool of transparent ink, made up of gelatine and Indian ink, is poured upon a sheet of very smooth paper, and the block is made to descend and press out all superfluous ink; after a few minutes the ink sets, and the block is again raised, and the impression dried, fixed in alum, and pressed.

**CURIOS.**—1. and 2. No restriction as to date is specified, but old or well-known pictures of past years would scarcely secure a prize in face of other productions. 3. For the prizes for series of three pictures, one series of each only should be sent; but for the prize for single pictures several might be forwarded. We fear your suggestion would avail little, for pictures by Robinson, Rejlander, Blanchard, Wortley, &c., would be distinguishable enough without any names being affixed.

**D. E. D.**—There is no doubt whatever that the stains are due to hyposulphite of soda. To make sure of the matter, we have tested with iodide of starch. You say the marks do not appear till after the prints are dry; this is very probable, especially as, in the photographs you forwarded, the stains are all in the same place, viz., in the left hand top corner. The pictures have no doubt been faultlessly fixed and washed; but they must have become soiled with hypo as they laid in a heap one upon the other, and hence it is that the markings are in the same position in all of them. Perhaps the hypo is upon the presser with which you keep the pictures flat, or perhaps the hand of the mounter was soiled when he handled them. We carefully cut out the spotted portions and tested them, as you may easily do yourself. Make a little thin starch very carefully with distilled water; add to it a drop or two of a solution of iodine, which may be made by dissolving a tiny fragment of iodine in alcohol, or in an aqueous solution of iodide of potassium. Put a little of this blue iodide of starch into two test tubes (the blue colouring should be so faint as scarcely to be discernible unless a white paper is held behind), and into one of them put the fragments of paper that are stained; heat under a spirit lamp for a few minutes, agitating the while, and then pour the liquid into a third test tube of similar dimensions. Compare the liquid thus treated with that in the other test tube: if it has bleached at all, you may be sure hyposulphite of soda is present.

**TWIN.**—Enlargements on opal glass, produced as you mention, should be permanent enough if properly prepared. If the photograph is not, however, carefully fixed and washed, or if left unvarnished in a room lighted with gas, it will, of course, be liable to discolour. Collodion is more easily freed from hyposulphite than an albumenized surface.

**G.**—Several methods for photographing on wood have appeared in the *News*. Gravers will tell you that the main objection to photographic sketches on wood is the film upon which the image rests. This must be obviated, or reduced to a minimum, in order for the process to be successful. Whitening the wood block by rubbing on a little whiting is first of all necessary, and then a very dilute coating of salted albumen is applied, which is sensitized in the usual manner. The collodio-chloride process has also been used in America with some success, notwithstanding the film. The *Illustrated News* has made some slight use of photo-wood engraving, and there is no doubt it is employed by the *New York Daily Graphic*; but the methods are, we believe, secret ones. There is no difficulty, however, in producing impressions by using dilute albumen.

**G. F.**—The lighting is too uniform over the whole face; there should be more shadow on one side, to give relief and vigour.

**PRINTER.**—There is an article on "Vignetted Photographs," by Mr. Bovey, in the *Year-Book* for 1874, which will tell you something of the matter.

**AMATEUR.**—The photographic exhibition at Paris was to close, we think, on the 30th ult.; the time may have been prolonged, however. It is located in the *Palais de l'Industrie*, in the Champs Elysees, and therefore in a very convenient situation for visitors.

Several Articles in type are necessarily held over till our next. Several Correspondents in our next.



## The Photographic News, October 9, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### USEFUL APPLICATION OF PHOTOGRAPHY BY THE HOME OFFICE: GUNPOWDER *versus* PYROXILINE.—VISIBLE IMAGES UPON DRY PLATES.

*Useful Application of Photography by the Home Office: Gunpowder versus Pyroxiline.*—It is too much, perhaps, to expect perfect immunity from explosive substances so long as we manufacture and employ large quantities of gunpowder and other combustibles every day of our lives; but measures certainly ought to be taken to guard us as much as possible from mishaps resulting in the transport and storage of such materials. As long as we have heavy charges of explosives carried about in the neighbourhood of populous towns and cities, so long shall we be liable to such disastrous occurrences as that the other day at Regent's Park; for, exercise what care and precaution you like, human beings are not infallible, and one careless action suffices to bring about the most awful consequences. Our Home Office has, during the last half dozen years, sought to cope in some way with these disasters, and has appointed an inspector of explosive materials, whose duty it is to see that proper care is taken in the manufacture of gunpowder, &c., and due precautions observed in its transport and storage. More than this, he is instructed to inspect the site of any explosion that may occur, note the results carefully, and make an official report on the same. He is enjoined to make an especial examination of the damage done, and the particular injury inflicted upon the buildings, so that something may be learnt by experience as to the nature of factory, &c., best suited for the manufacture and storage of the material; and in the execution of this branch of his duty he has recourse to photography to aid him in depicting the scene as truthfully as possible. Every report the inspector makes is accompanied by photographic illustrations, which serve to corroborate the view he takes of the matter, and to show how far precautions which have been taken to prevent the effects of the explosion from spreading—such, for instance, as screens, mounds, ditches, intervals, &c.—have fulfilled their purpose. The camera rapidly sketches the whole scene immediately after the occurrence, showing, possibly, how and where the brickwork has given way; how the light roof above has been blown off with little injury; how strong bolts have resisted the force of explosion, and have been torn and twisted in consequence; how the hollow in which the magazine stood has served to arrest the course of the injury; how the water from the tank above has, in consequence of the explosion, flooded the building, and put out any remnants of fire. The Regent's Park calamity brings, however, other ideas to one's mind; and one point which strikes a photographer is, whether we are still employing the safest kind of explosive nowadays. Every photographer knows that pyroxiline or guncotton is a much more powerful compound than gunpowder, and now that our chemists have discovered that it may be detonated in a wet state just as well as in a dry condition if you only know how, it becomes a question whether our photographic material cannot be more widely employed than hitherto. Guncotton soaked with water is, as we know very well, not only incombustible, but positively unflammable under ordinary circumstances, and might even be used with advantage in extinguishing a fire, in the same way as a wet blanket. No danger could possibly arise from the transport or storage of large masses of such material as this, and it might safely be carried by rail or canal through our cities without the slightest prospect of its becoming inflamed. And yet, as we have just said, it is capable of being employed as a valuable explosive under special conditions. It can be thrust into a blast-hole in the rock sopping with water, or bundled into a cabbage net and thrown into the sea, and under

these circumstances can be made to explode with a terrific power, equal to that of five times its weight of gunpowder. The secret is simply this (a secret we owe, by the way, to one of our clever war chemists, Mr. E. O. Brown): although guncotton can only be exploded when dry by a fulminating powder, dry guncotton, on its side, can detonate other guncotton, whether dry or wet, and thus it is only necessary to initiate an explosion in a small dry charge in order to make a large quantity of wet pyroxiline take fire. Take a dry cake of guncotton, place it in the middle of a heap of wet, and then detonate it, and the whole at once blows up, the unflammable cotton being quite as destructive in its effects, under these circumstances, as the dry. "If so," the reader may exclaim, "a store or cargo of wet guncotton would be always dangerous so long as there was a small portion of dry material in the building also." This is not so, however. Dry guncotton can communicate detonation to wet, but not inflammation: in other words, if you set fire to a cake of dry guncotton with a red hot iron, any wet pyroxiline in the neighbourhood would refuse to ignite; but if you detonate the cake with fulminate powder—and then only with a fulminate of a special kind—the whole mass of wet and dry material will undergo combustion. So that it is only by means of a particular key that we can get to the exploding properties of wet guncotton, and, failing this, we can always rely upon its perfect safety. Under these circumstances, it seems to us matter for grave consideration whether pyroxiline should not be more universally adopted, both for military and for industrial purposes.

*Visible Images upon Dry Plates.*—Before developing some of Col. Stuart Wortley's dry uranium plates, the other day, we were surprised to find on several of the films a distinct outline of the image on viewing them by reflected light. Such an impression we never remarked before, and it is possible, therefore, that the action may have been rendered visible by the colour of the film, for this was the first time we had worked with bromide plates with stained collodion. The plates, too, strange to say, proved to be under-exposed, so that the action could not have been due to a prolonged exposure to light. By transmitted light nothing was visible, nor did the phenomenon occur on all plates that had received an equal amount of exposure. We propose coming back to the subject again shortly, confining ourselves on the present occasion to a bare mention of the fact.

### AMERICAN CORRESPONDENCE.

#### NEW METHOD FOR SILVERING PAPER—MAKING SOLAR NEGATIVES—COLLODION FORMULE—THE USE OF GRAPHITE IN THE NEGATIVE PROCESS.

Mr. M. M. Griswold, of Boston, gives the following new method for silvering paper:—

"The bath I use is from thirty to forty grains strong, containing a strong dose of nitrate of ammonia, and is alkaline from ammonia. The paper is immersed, face up, one at a time, until from ten to twenty sheets are covered by the solution. The dish being rocked back and forth to loosen bubbles and make sure that each sheet is thoroughly wet, I then turn the whole mass over, which brings the first ones immersed to the top face down. The next operation is as follows: have a sheet of double thick glass a little larger than the paper (I am speaking of whole sheets of paper), which place at a proper inclination to drain the surplus solution back into the bath. Float the paper to one side of the bath to get them even, then take them all out together, and lay them, face down, on the inclined sheet of glass, near enough to the top to be held with two wooden clips, one at each end: the drainage is now all back into the bath. To hasten this operation I use a squeezer—a strip of rubber set into a stick a foot or more long, which is applied lengthways at the top of the paper, and pressed forwards towards the bottom, forcing the solution out of the paper into the bath. If desired to secure the largest amount of silver absorbed by the paper, press the solution from the top sheet, then the next, and so on; or the whole can be



squeezed at once. What I claim for paper so prepared is, greater depth and transparency to the picture, and perfect uniformity in the paper, with facility, and equable toning. The paper prints clear through, giving great body to the darker parts. On the score of economy of silver, I think the loss less than when paper is hung up to drain (on the floor) in the usual way. The saving of time in silvering by this method would largely overbalance the waste of silver by extra absorption, if there be any.

"Here is another dodge I have lately suggested. You know that I have gone back to first principles, and use a flat dish for negatives. My dodge is a funnel for filtering into flat dishes. I call it the 'Hour-glass Funnel.' When the cotton or sponge gets dirty, turn it over, and run water through the other way: it saves bothering with bottles, &c.

Mr. J. W. Wykes touches a subject that has been much neglected—that of making solar negatives. His formulæ may help many others. He says:—

"I have tried every other method, and always go back to this with pleasure. If this will help some one that is making those hard negatives so annoying to solar printers to better results, I shall be repaid.

"*Bath*.—Forty grains of silver to one ounce of water; one-half drachm of nitric acid to sixteen ounces of solution. Use collodion of a deep colour, with about five grains of cotton to ounce.

*Developer*.—Water ... .. 20 ounces  
Iron ... .. 1 ounce  
Nitrate of potassium ... .. 120 grains

From Mr. C. A. Zimmerman, St. Paul, Minn., comes the following collodion formulæ:—

*Good Keeping Landscape Collodion for Cool Weather Use.*

Ether and alcohol ... .. equal parts  
Iodide of cadmium per ounce collodion ... 6 grains  
Bromide of cadmium per ounce collodion ... 3 "  
Cotton from 5 to 8 grains per ounce collodion.

"This will keep any length of time, and will, with proper handling, give fine, soft, and brilliant results. For this collodion double solution of iron developer is the best.

*Landscape Collodion for Ordinary Use.*

Ether and alcohol ... .. equal parts  
Iodide of ammonium per ounce collodion ... 2½ grains  
Iodide of cadmium per ounce collodion ... 2½ "  
Bromide of cadmium per ounce collodion ... 2½ "  
Cotton *ad libitum*

"Will keep moderately well, and give very brilliant results.

*Portrait or Landscape Collodion for Immediate Use.*

"Will not keep as long as above two formulæ.  
Ether and alcohol (equal parts) .. ... 1 ounce  
Iodide of ammonia ... .. 5 grains  
Bromide of ammonia or cadmium ... .. 2½ "  
Cotton as desired

From Mr. E. Bierstadt, of New York, I have the following interesting notes on the use of graphite in the negative process:—

"While the subject of 'graphite negatives' is yet fresh, it may be well to name a few other uses that are not generally known for graphite in photography. 1st. Ordinary negatives can be strengthened with it in this manner: after developing and fixing, wash well, and drain the plate, and pour on the dextrine solution at the upper corner, so that the water still on the plate may be driven off before the stream of dextrine; drain and pour over once more, and this time do not drain off too close, but as soon as the stream becomes broken into drops, bring the negative back to a horizontal position, and dry over a spirit lamp; then, with the negative laid face down on a dark cloth, expose the back side to strong light nearly one-half longer than would be required for making a negative; then the graphite must be applied as usual with a camel's-hair brush until the desired strength is attained. 2nd. A new negative can be made on the back of an old one. It will be remembered that a patent was granted some time ago for coating both sides of the glass plate with collodion, and developing both so as to make one diffused image on the back of the one in focus, so that prints might be made with all the soft effect of a retouched negative; with graphite this can be done after the sharp negative is made, or it can be made on the back of any old negative. Clean the back, and coat with the sensitive compound as for a negative; dry by heat, and expose the negative side to light, and apply graphite as usual."

EDWARD L. WILSON.

## THE PRACTICAL PRINTER IN AMERICA

### XI.

#### MODIFYING AND RETOUCHING NEGATIVES.

THE improvement of negatives by retouching and other methods of modification is scarcely a duty which comes within the scope of the printer, but as none can know so well as the skilled printer the especial needs of each individual negative in order to secure good results, it is desirable that he should perfectly understand the various modes of improving the printing quality of the negative, and that he should be master of the various methods of modifying results. Masking with semi-transparent paper, roughly applying colour over some portions of the negative at the back of the glass, shading by exposure to light, and various other "dodges," become the legitimate work of the skilled printer. Mr. Hearn treats judiciously of retouching, and if the printer be able to effect those simpler operations in retouching which are confined to removal of defects, it will be well. Modifications of light and shade or expression should only be attempted by a skilled draftsman:—

"Before printing from the negatives they should be held up and studied by transmitted light, and if there is any way to improve them, then it should be done.

"The skill required in printing from the negatives does not consist in placing them in the printing-frame as received from the retoucher, and printing from them mechanically, by putting a piece of paper from the same sheet of sensitive paper on negatives differing greatly from each other, and then printing them all to about the same shade.

"The negatives, to warrant this treatment, should be very evenly made as regards lighting, exposure, &c., and this is not a very regular occurrence in the best of photographic studios. The negatives, as they are received from the retoucher, should, to be sure, in the majority of cases, be ready for printing without any further treatment of the printer; but I have, however, found this to be a very rare occurrence, very often, indeed, seeing negatives which are faulty in some particular place, and which can be vastly improved by a little doctoring before printing.

"This part of the printing is probably one of the most important, and the value of a printer is in a great degree determined by it. It may be well to state here, that in proving the negatives, we only take out the most objectionable imperfections in the face, and leave the final retouching to be done by the artists, when they have decided on the negatives they prefer.

"I will now take up separately the different parts of the negatives, and state the manner in which they can be improved.

"*The Background*.—Often there are streaks running through the background which should be filled up with lead to the opacity of the surrounding parts, when these streaks are not as dense as the rest of the background when viewed through transmitted light. Sometimes the background is very bad indeed, so much so that the pencil will not thoroughly remove the defects. In such cases the negative, besides being printed in a small vignette to get rid of a great proportion of it, may have upon the back of it, over those transparent parts which are likely to be visible in the print, some transparent colour. I always use for this purpose some Prussian blue. This colour should be laid over the necessary places in smooth and even strips; and then the background, according to how nicely this blue painting has been done, will print proportionately better.

"Often 'smoking the negative' is resorted to, which consists in moving constantly the back of the negative over a smoking lamp until the smoke has gathered on the negative to the right opacity. Then, after removing the smoke that may be on the face, hands, and other parts of the figure, you proceed to remove it from that part of the



background which prints the lightest on the print, leaving it on that part that prints the darkest, and then the smoke, if it is not too thick, will stop out about enough, so that the background may print pretty fairly in a vignette or illuminated print, as the case may be. Always print negatives with bad backgrounds in vignette style, if it is possible.

"For extreme faulty backgrounds it is best to make another negative of the sitter if it is possible, and not resort to the 'smoking,' &c., unless it is impossible to obtain another one.

"*The Shadows—The Face.*—The shadows of the face will now be taken into consideration.

"In life, all of the shadows of the face are transparent, i. e., there is always plenty of detail in them.

"In a negative, however, this is often different, the shadows generally being quite black, more so by far in the majority of cases than they should be.

"Under the eye there is often a heavy line, and over it a very heavy shadow, which in life does not show so plainly as it does in the negative, partly because they are flesh colour, and because—unless the person is in direct sunshine—there are no marked contrasts between the light and shade; and even then, if we do not look for them, they are very seldom attracted by an eye unaccustomed to the studying of the different effects of light and shade throughout all nature.

"In a photograph, where everything is either black or white, with proper gradations, these shadows and lines are more observable than they are in life, on account of their printing black. These shadows, &c., to be true (at least, as far as possible) to nature should be removed more or less, according to circumstances. The lines under the eyes should then be removed in a great measure, in many cases (according to the age of the person, &c.) only leaving a trace of each line there, and they will then be as observable in the photograph as they are in life. The shadows under the eyebrows should then be very much removed, unless there has been considerable time given to the negative in exposing, and thus have obtained *soft shadows with plenty of detail*. As long as there are detail and softness to the shadows, there is never much need of having them lightened more than a mere trifle.

"In lighting the shadows in printing, young beginners often carry it too far—so far as to make the prints in the neighbourhood of the eye, or wherever the place may be, look very flat, and thus have an equally bad result, but in another way. About the eye there should always be a proper amount of shadow, so as not to make it look swollen.

"This lightening of the shadows can very nicely be done by stripping evenly or stippling some transparent colour on the back of the negative, exactly behind the place to be lightened. As has before been said, we generally use for this purpose Prussian blue, which comes in little cakes, costing about seventy-five cents per cake. It is applied with a suitable brush wet with a little water, and upon which a little of this blue is dissolved. The thickness of this colour can be determined only by a great deal of experience, and to blue-paint a negative nicely is accomplished only after considerable practice.

"The lines between the eyes can be touched out best by the use of a Siberian No. 2 lead-pencil. In touching them, do not take them thoroughly out, unless the scowl was occasioned by the strong light in which the sitter sat, and is not habitual.

"There are sometimes very heavy shadows occasioned in lighting—'after the manner of Rembrandt' (?)—and these shadows are sometimes so very heavy as to be displeasing; then it becomes necessary to soften them. This is done before printing by placing a proper coat of blue paint on the back of the negative and over the whole side of the face. Considerable skill is required in placing this on so large a place, because if it is not placed on even

it will print spotty. Sometimes there are heavy shadows under the nose, chin, and often in the ears. Treat as above.

"It is necessary sometimes to prepare the lights of the negatives for printing, although generally they are doctored during and after the time of printing. For instance: very often the lightest side of the face will be too light when the shaded side is fully printed, and to prevent this it is sometimes necessary to blue-paint (as we shall hereafter term it) the shaded side as described above, so as to permit the light side to print without overprinting the shadow one. Generally while printing, when the shaded side is done, and there is some detail on the light side, the print is taken off, and the blank, white side shaded or tinted a little in strong light, by permitting the light to pass through a suitable aperture, cut in a dark piece of paper, on that side to be tinted. More of this further on. Let this remark answer for the present:—Never do the shading as last described unless there is some detail on the light side, because if there is not, the discolouring of the light side will flatten it very much, and thus be the means of ruining the prints. Your object is to soften a little, and not flatten a great deal, and as before said, there should be some detail on that side to accomplish the desired result. In shading this side, a very few seconds' exposure to the sunlight will suffice.

(To be continued.)

#### ON THE PHOTOGRAPHIC TRANSPARENCY OF VARIOUS BODIES, AND ON THE PHOTOGRAPHIC EFFECTS OF METALLIC AND OTHER SPECTRA OBTAINED BY MEANS OF THE ELECTRIC SPARK.

BY W. A. MILLER, M.D., LL.D.\*

##### b. Absorption by Transmission through Liquids.

16. In the experiments with liquids, the same plate glass trough with quartz sides was used as when solutions were employed, and the apparatus was arranged in exactly the same manner. Great care was taken in the purification of each specimen. The bisulphide of carbon, and indeed most of the other liquids, were rectified immediately before proceeding to experiment upon them.

The following table contains a list of the liquids operated

TABLE II.—*Diactinic Power of Liquids.*

Thickness of stratum 0.75 inch.

Name of substance.	Transmission of spectrum.	Relative lengths of spectra.	Remarks.
Water ... ..	170.5	74.0	With a faint impression of the rays about 156.
Wood spirit ... ..	116.5	20.0	
Alcohol ... ..	159.5	63.0	
Fousel oil ... ..	116.5	20.0	
Glycerol ... ..	107.5?	11.0?	Slight empyreumatic odour.
Glycerine ... ..	114.5	18.0	
Ether ... ..	112.5	16.0	
Chloroform ... ..	122.5	26.0	
Dutch liquid ... ..	132.5	36.0	Specific gravity 0.831. Boiling point 360°. Slight yellowish tint.
Oxalic ether ... ..	115.5	19.0	
Carbolic acid ... ..	104.5	8.0	
Benzol (C <sub>12</sub> H <sub>6</sub> ) ... ..	117.5	21.0	
Paraffine oil (C <sub>20</sub> H <sub>42</sub> +2) ... ..	111.5	15.0	Retaining a little phosphorus in solution. Glacial.
Oil of turpentine ... ..	104.5	8.0	
Phosphorus (melted) ... ..	.....	0	
Bisulphide of carbon ... ..	102.5	6.0	
Oxychloride of phosphorus ... ..	.....	0	Specific gravity 1.3. Specific gravity 1.1.
Terechloride of phosphorus ... ..	.....	0	
Terechloride of arsenic ... ..	101.5	5.0	
Acetic acid ... ..	112.5	16.0	
Sulphuric acid ... ..	160.5	64.0	
Nitric acid ... ..	106.5	10.0	
Hydrochloric acid ... ..	152.5	56.0	

on, and the lengths of the different spectra, in terms of the scale already explained (par. 7). The compounds included in the preceding table, with the exception of nitric and

\* Continued from page 472.



hydrochloric acids, are not simply solutions, but liquids to which a definite chemical formula may be assigned.

The starting-point for each spectrum was 96.5 upon the scale already adopted.

Of all these liquids, water and alcohol are the only two, except sulphuric and hydrochloric acids, which are strongly diactinic; water is eminently so, alcohol in a much less degree. No relation in this respect is traceable between common alcohol and the other alcohols examined, viz., wood-spirit, fousel oil, glycol, glycerin, and the phenic alcohol, carbolic acid. Bisulphide of carbon, the refractive medium employed in my earlier experiments, is singularly deficient in diactinic power, and is therefore eminently unfit for such researches.

#### o. Absorption of Chemical Rays by Transmission through Gases and Vapours.

17. In the experiments upon the absorbent action of aeriform media, the gas or vapour under trial was introduced into a brass tube two feet long, blackened on the inside, and closed at the end by plates of quartz, which were fitted on so as to form air-tight joints. The tube could be attached by a stopcock to the plate of the air-pump, and after exhausting the air, any gas could be easily introduced. In cases in which the gas was liable to act upon the metal a glass tube was substituted for the metallic one, and the gas was introduced by displacement. The tube when prepared was interposed at t, fig. 1 (par. 6), between the slits and the prism b, and the rays emanating from the electric spark were, after traversing the column of gas contained in the tube, received first upon the prism and lens, and then upon the excited collodion surface, in the usual manner.

When the vapour of a volatile liquid was to be examined, a few drops of it were generally allowed to fall into the tube filled with air, through which the vapour was allowed to diffuse itself at the ordinary temperature. The action of such vapours was therefore compared at a great disadvantage with that of the various gases, particularly where the volatility of the liquid was rather low. The results, however, even under these disadvantageous circumstances, were well marked, as may be seen by examining the subjoined table of gases and vapours submitted to experiment, in which the comparative lengths of the different spectra are shown in the second column of figures.

TABLE III.—Absorbent Action of Gases and Vapours on the Chemical Rays.

Length of column of gas 2 feet.

Name of Gas.	Termination of spectrum.	Relative lengths of spectra.	Remarks.
Atmospheric air ...	170.5	74.0	
Hydrogen ...	170.5	74.0	
Carbonic acid ...	170.5	74.0	
Carbonic oxide ...	170.5	74.0	
Olefiant gas ...	162.5	66.0	
Marsh gas ...	159.5	63.0	
Coal gas ...	133.5	37.0	Cut off abruptly.
Protoxide of nitrogen ...	159.5	63.0	
Cyanogen ...	159.5	63.0	
Ammonia ...	170.5	74.0	
Sulphurous acid ...	110.5	14.0	Cut off abruptly.
Sulphuretted hydrogen ...	110.5	14.0	Cut off abruptly.
Bisulphide of carbon ...	101.5	6.0	A few of the strongest lines
Dichloride of sulphur ...	108.0	10.0	between 140 and 152 are seen
Benzol ...	131.5	35.0	Faint beyond 111.5.
Oil of turpentine ...	152.0	55.5	
Chloroform ...	152.0	55.5	
Ether ...	163.5	67.0	
Tetrachloride of phosphorus ...	131.5	35.0	Very feeble spectrum.
Oxychloride of phosphorus ...	141.5	45.0	Fades out very gradually
Hydrochloric acid ...	151.5	55.0	
Hydrobromic acid ...	119.5	23.0	Cut off abruptly.
Hydriodic acid ...	111.5	15.0	Cut off abruptly.
Peroxide of nitrogen ...	0	0	
Peroxide of chlorine ...	0	0	

18. The absorbent action disclosed by the foregoing experiments on the colourless gases and vapours is very

interesting, as it proves that differences exist in the diactinic power of these substances quite as marked as in the case of liquids and solids. Some of the elementary gases—oxygen, hydrogen, and nitrogen—appear to possess a diactinic capacity greater than any solid or liquid body. Many compound gases, such as ammonia, carbonic acid, and carbonic oxide, appear to rival them. Olefiant gas, cyanogen, and hydrochloric acid exhibit a decided but not great absorptive power, with which that of the vapours of ether, chloroform, and oil of turpentine at the atmospheric tension, and when diffused through air, may be compared. Doubtless if these vapours were tried at a tension of thirty inches, they would exhibit greater absorptive power. The absorptive action of hydrobromic acid much exceeds that of the hydrochloric, and that of hydriodic acid is greater than of either.

The abrupt termination of the spectrum in coal-gas is remarkable. The absorption appears to be due, not to the permanent gases, but to the vapours of benzol and other heavy hydrocarbons which it contains. The four compounds of sulphur—viz., sulphurous acid,\* sulphuretted hydrogen, bisulphide of carbon, and dichloride of sulphur—are especially active in absorbing the chemical rays; and the vapours of the tetrachloride and oxychloride of phosphorus exhibit a similar though less intense absorptive power.

(To be continued.)

#### A FEW WORDS ABOUT PRINTING.†

The matter of printing has already been the subject of many an article and discussion, and yet there are some branches of the subject in which we make no progress. Complaints about albumenized paper have not yet ceased. Perhaps the albumenized paper makers themselves will aid us, now that they have given notice of an advance of twenty-five per cent in their prices, and they will supply us in future with a material which is twenty-five per cent better. Time will show.

Many a time the question has been asked: is there no better material than albumen from which a photographic material can be prepared? The number of experiments that have been made to this end are incalculable, and thus we have gelatine paper, amorph-paper, caseine paper, gluten-paper, collodio-chloride paper à la Ost, and collodion paper à la Obernetter, enamel paper, and heaven knows what besides, for in France there are still other sorts manufactured. Some very beautiful specimens have been secured on these materials, so that it is matter for regret that the experiments have again sunk into oblivion. Some of the papers have peculiar advantages. Such sharply printed pictures as those upon Obernetter's collodio-chloride paper I have never obtained on any other material, and the paper has besides a vigour and depth not possessed by an albumenized surface. It is always a difficulty to obtain a sharp and brilliant picture from a thin negative; but with Obernetter's paper the problem is easily solved.

The doubly coated albumenized paper is now-a-days recommended, the high gloss the paper possesses being due, probably, to the additional coating. This gives brilliant pictures, but not so vigorous as collodion-paper. One of the drawbacks of the latter is, of course, its tendency to break. Ost, however, says that this defect is easily avoided. Certainly the matter deserves a little more trial, for we shall otherwise remain sitting at the silver process for some time to come. Endeavours to bring forward the carbon process have proved unavailing. The latter was too uncertain, and only answered in the hands of those who were well skilled in its employment. Every photographer is aware of this. Just now the carbon process has been much simplified in England, and it is

\* An aqueous solution of sulphurous acid cuts off the spectrum at the same point as the gas itself does.

† Photographische Notizen.



said to be no more difficult to work than the silver method. Why, then, is it not adopted? On the one hand, probably, there is a lack of operators who understand the process, for the principal himself cannot give up his time to the matter; and on the other, the materials are doubtless too expensive. A sheet of pigmented tissue is said to cost about sixpence. For this money a sensitized sheet of albumenized paper may also be prepared. It is the same with *Lichtdruck*. Printing in pigments, and with greasy ink, are both very good things, but they do not appear adapted to all of us. Some very nice *Lichtdruck* prints are produced now-a-days, but everybody cannot produce them, and certainly not every printer. I have followed the subject with much interest for some time, but never had time to take the matter in hand myself, for to prepare a *Lichtdruck* block in order to print off a dozen portraits is scarcely profitable work. The silver process is less troublesome, and gives prints of a finer character.

Despite many efforts on our part, it must be admitted that we have as yet got no farther than the silver printing process. The operations of printing, toning, and fixing are the same to-day as they were sixteen years ago. It may be that we are in a position now to save our silver, for there is now paper already sensitized to be purchased in commerce. I saw some recently made by Talbot, of Berlin. This material is, however, not for the ordinary photographer, but for engineers and builders, for copying their sketches and drawings. The duplicates are printed without lens or negative. The drawing is placed in the printing-frame, then a sheet of the Talbot paper is put upon it, and the frame closed. On exposure to light, the black lines of the drawing keep back the rays, while the white portions allow them to pass, so that a negative on paper is the result. The process gives quite startling results, and those who doubt it should make the experiment. The paper negative is not toned, but only fixed, and then a positive may be produced from it in the same way. Why do not photographers employ this kind of paper? It is very good, for I have kept a piece of it for six months, and it is still perfectly white. It seems to me, however, that the pictures tone with difficulty; at any rate, my chloride of lime toning bath gives no agreeable results. M. Talbot himself has given no formula for a toning bath, and it would be well for him to do so. To many modest photographers the process would be welcome in case they did not wish to have resort to silver printing; for the employment of albumenized paper brings with it many defects, such as the discolouring of the bath, the dissolving of the albumen, the tinting of the surface on keeping, &c. All these would be overcome by having resort to a paper ready sensitized that would keep well.

I will admit that most of the defects to which I have alluded are easily removed, if one only knows how to go to work. There are, however, many who do not. I am acquainted with printers who put brown baths in the sunshine, or add kaolin to them. Such remedies were good enough when we knew no better, but now they are quite superfluous, since permanganate of potash is used in the studio. Two or three drops of a solution of this useful compound will render a brown bath again clear in an instant. More of the solution must not be added than is necessary; too much is injurious. Another point about which we often hear complaints is the production of weak prints by reason of poverty of the bath. One would think that the argentometer would indicate when there is too little silver; but, unfortunately, the instrument gives false results by reason of the bath containing other salts than those of silver. The only way of properly controlling is to employ the Vogel silver test. It is, however, seldom used, because many find it too troublesome, and with some people to take things easily is everything.

Acid in the bath is also readily removed. A few drops of carbonate of soda solution is sufficient for the purpose; but how seldom is this simple recipe adopted!

## Recent Patents.

### ORNAMENTING MIRRORS WITH PHOTOGRAPHS.

BY CHARLES SMITH.

The following specification describes a mode of ornamenting mirrors with photographs and other designs:—

"The object of this invention is the use or application of mirrors and other plates of silvered glass for advertising, decorative, and art purposes generally. When desired, the lines, letters, figures, and ornamentation used therein can be so arranged that the silvered glass which has not been disturbed or affected by the process may retain its usefulness as an ordinary mirror. The glass may be cut or cast in any required or desired form or shape, and be used for ornamental panelling in furniture, on the walls and ceilings of rooms and buildings, and for various other decorative purposes; also for plain or ornamental notice or show-boards for advertisements and other similar purposes.

"The method of carrying the above object into effect in practice is as follows:—I take properly silvered plates of glass of the requisite size and shape, and remove therefrom that portion of the said silver or silvering which it is proposed to occupy or cover by the lines, letters, figures, or other devices or objects intended to be represented or exhibited. For lines, letters, and small devices I remove the silvering with a style, graver, or other finely pointed or sharp-edged tool or implement, either with or without the aid of a stencil plate cut to the required device, or by a brush or other instrument and stencil plate only. In the case of larger pictures, photographs, works of art, and other devices, I trace the outlines, shapes, or forms thereof on the silvering, and remove a portion of the same in the manner previously described, or by means of a brush or other instrument with a stencil plate of the required form; or the said silvering may be removed from the glass by any of the usual chemical agents capable of decomposing it or detaching it therefrom, care being taken in all cases to leave the edges of the silvering which is left on the glass as 'clean' or even as practicable. The lines, letters, and other such portions of the cleared glass are then covered with pigment, coloured paper, or other suitable material or materials, or frosted, or otherwise treated to render them visible, or to produce the desired effect. The larger pictures and other devices are placed in the spaces cleared to their respective shapes, and are secured therein by strong paper, cloth, or other backing on the whole or a portion of the silvered glass. The latter may be previously covered with paint or other suitable material, to form a ground or protection. Photographs and other objects thus presented to the eye will appear in high relief, and their general beauty and effect be greatly enhanced.

"Having thus fully described and ascertained the nature of the said invention, and the method of performing the same, I claim as new, and desire to secure by the before mentioned in part recited letters patent, the method of ornamenting mirrors, and displaying lines, letters, figures, pictures, works of art, and other devices thereon, substantially as and for the purposes herein described."

### ALBUMENIZED PAPER ON BOTH SIDES.

BY JAMES BECKETT.

The method of albumenizing paper on both sides here proposed received provisional protection only:—

"This invention has for its object an improved system of treating paper by albumenizing instead of coating one side only. I immerse the paper in the albumen solution, thereby coating the paper on both sides at once. The paper may be coated on both sides by floating, but I prefer immersing as a quicker system.

"The object of this invention is to give greater stability to the paper, and thereby rendering it more impregnable to the various chemicals that it is subjected to in washing, toning, and fixing. By coating both sides of the paper with albumen the saving of chloride of gold is immense, and the hyposulphite of soda is prevented from entering into the porous or fibrous side of the paper, thereby rendering the prints more durable. With this paper five minutes' washing is sufficient, and blistering of the paper is prevented. Paper prepared by this system works well with my patent washing, toning, washing-fixing, and washing-machine."



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## THE PHOTOGRAPHIC EXHIBITION.

It is scarcely necessary to remind our readers that the Annual Exhibition of the Photographic Society will open with the usual conversazione on Tuesday evening next, and that the display of the pictures competing for the prizes munificently offered by Mr. Crawshay will be held in the same room, and so form, in fact, part of the general exhibition. The exhibition will remain open for a little more than three weeks, closing on the fifth of November. On the Monday and Saturday of each week, and on the closing day, the exhibition will be open in the evenings from seven till ten o'clock, and so afford opportunity for operators and others engaged during the hours of daylight to visit the exhibition.

We hope and believe that the exhibition will be a good one, and that it will prove creditable and satisfactory to all concerned. As, however, in exhibitions planned and carried out under the most favourable circumstances, it always happens that some hitch, *contretemps*, or trivial blunder arises to cause disappointment to some one, it may not be out of place to bespeak patience and consideration in such cases, especially on the present occasion. The arrangements have been, from a variety of causes, inevitably somewhat hurried; the most desirable gallery for an exhibition could not be obtained; and the executive of the society and of the exhibition is, to some extent, new; and all these circumstances increase difficulties. We make these remarks, not in anticipation of troubles, but because, from two or three letters we have received, we find that a tendency to sensitiveness and irritability exists. Some correspondents write to complain of error and confusion in the repetition of the terms of the Crawshay competition. If such error had occurred earlier in the season, when it might have influenced the operations of photographers preparing specimens, it might have legitimately become ground of serious grievance; but, although error is always undesirable, this one could scarcely cause inconvenience to anyone now; for it is inconceivable that any of the negatives for competing pictures were still to be produced. Another correspondent points out that through the absence of a distinctive heading in the circular sent out, Mr. Crawshay's noble series of prizes may easily be read as a list of prizes offered by the society. Technically, a specific heading to the list of Mr. Crawshay's prizes would probably have been better; but no error can reasonably arise out of the matter as it stands. The whole matter is in truth too trifling for discussion, and we refer to it to deprecate the spirit out of which, we fear, such complaints occur, and to

urge upon all concerned a frank, manly spirit of good faith. The beginnings of strife are very dangerous, as all interested in the welfare of the society have reason to know. Petty disappointments, petty jealousies, petty ambitions, were the initial factors in the mischief which commenced twelve months ago. Let us hope that any repetition may be avoided on the present occasion.

## LAMBERT-TYPE.

We have recently had the opportunity, during two pleasant visits to the studio of Mons. Lambert in Paris, of witnessing the various operations which are included in the general term *Lambert-type*. Primarily, Mons. Lambert's process consists of a system of enlargement; but it is more essentially a simple mode of finishing negatives, whether enlarged or otherwise, by which the effect of much artistic labour is secured by the expenditure of a very slight amount of time and labour. Whilst not strictly new in some of its parts, it is certainly new in its systematic combination of the parts, and decidedly new in its results. In our next we hope to enter into details, but we briefly refer to the matter now in order to intimate that we hope to place a couple of specimens in the forthcoming exhibition, by the examination of which our readers will appreciate for themselves the character of the results more satisfactorily than they could after reading the most elaborate description. The examples are a couple we selected from the commercial work in hand at the time we were present, and to which we can testify as the result of extremely little labour. One of these—a group—we saw produced. The original negative had a plain background, which, being spotty and imperfect, was changed, in the manipulation, to the dim woodland background which it now presents, without, as may be seen, any trace of masking or outline. We shall have more details to give in our next.

## THE VARIED FORMULÆ OF DIFFERENT PHOTOGRAPHERS.

SOME years ago we published in the PHOTOGRAPHIC NEWS some account of the formulæ and manipulations of a number of distinguished photographers who had taken high rank in different phases of the art. The details were found to be varied enough to furnish matter for interesting comparison, and were at the same time sufficiently alike to warrant an apothegm we have often repeated, to the effect that success rests with the man, not with the method. Nevertheless, the method is not without importance, and most photographers read with eager interest information bearing on the precise mode of working of their successful fellows. Bearing this in mind, the editor of *Anthony's Bulletin* has conceived the happy idea of obtaining from a considerable number of his readers in America similar details to those to which we have referred, some extracts from which will doubtless interest English readers. We should premise that the photographers selected as able to give useful information are those whose pictures exhibited at the late Chicago Exhibition have possessed distinguished excellence. In many cases the responses to the editor's request for details of the mode of working are amusingly brief. One gentleman (Mr. Barhydt, of Rochester), whose portraiture is singularly fine, states that he uses "no unusual method, save care and skill." Another gentleman writes in very similar terms: he uses the "oft-published and well-known formula;" but if his work possesses any merit, "care, cleanliness, and practical judgment are the factors which have entered into the production of it." There are many letters (all published in full) to the same end. Here is a model example of epistolary brevity:—

"Mt. Vernon, O., July 31, 1874.

"DEAR SIRS,—We use Sutliff's amber collodion; bath, thirty grains; iron developer; fix with cyanide; T. and M. paper, silvered one minute on fifty grain solution. Dallmeyer lenses. Yours,  
F. S. CROWELL."



Mr. J. W. Black, of Boston, still adheres to his nitric acid bath practice. He says:—

"In reply to your question, I can only say that the process by which the best pictures I had at Chicago were made is the most simple and least troublesome one I have ever used, a weak bath from ten to twenty-five grains of silver, very acid; good, strong (or collodion with good body) collodion, sensitized with iodides and chlorides only; no bromides. It only wants a little skill and judgment to work in this way, and when once a person has become accustomed to it he would never go back to the old way of using bromides and strong and neutral baths."

Mr. E. R. Weston, the inventor of the burnisher bearing his name, an amateur whose portraiture is of the highest excellence, excelling much of the professional work we have seen, uses a silver bath unusually weak, and developer unusually strong, the former being a sixteen-grain solution, and the developer containing nearly a hundred grains of the iron salt to an ounce of water. Here is his formula:—

"I made those pictures at Chicago as follows:—Negative bath—fifteen grains; collodion—iodide of ammonium three grains, bromide of potassium half a grain; developer—iron eight ounces, water forty ounces, acetic acid sixteen ounces; paper bath—water sixteen ounces, alcohol four ounces, silver one ounce; lens—2A Dallmeyer; ridge-roof light, ground glass."

Mr. C. Gentile, of Chicago, sends some interesting details as to his lighting. He says:—

"My operating room is, perhaps, different to any other in the United States. The skylight had to be made to suit the building (or, I should rather say, the proprietors), as they would not allow the walls to be altered in any way. I have a northern light; the skylight is thirty-seven feet from the floor at the highest point. I also have a side light consisting of four large plate glass windows about three feet apart. With a little skill in working it I can say that I consider I have a pretty good light. As regards formula, I make my chemicals according to my light. I use my collodion more strongly iodized than I would under a different light. I also use a strong iron developer. Children's portraits I take in a few seconds; adults I generally sit from twenty to thirty seconds. I generally use a Voigtlander lens, as I have a very excellent one."

Mr. C. H. Lanphear gives details of a curious experiment with collodion. Having had some trouble with spotty negatives, he says:—

"Having on hand a quantity of old red collodion, that was compounded before I used Mr. Anderson's formula, and composed of two or three different lots differently compounded, that had been poured together from time to time to get rid of—the remains of a lot that had ceased to work satisfactorily—I took this old collodion and poured into it a saturated solution of cyanide of potassium, a little at a time, till the colour was changed to a light straw, and an oily-looking substance was formed at the bottom of the mixture. After standing a short time, I decanted into a gallon bottle, and added that of Anderson's, which was working so spotty; and as the resulting compound was rather thin to suit me, I added a little more cotton, and the next day tried a negative with the best of results. It has continued to work good, either out doors or in."

Mr. J. Battersby, having no novelty in formula to communicate, describes his mode of producing a sheet of reproduced portraits which he exhibited. He says:—

"Tack a sheet of silvered paper by the four corners on a board, and expose to light for whatever shade your background is to be; tone and fix, of course, in the usual way, and mount upon card-board. Cut out your figures with clean edges, and group and mount them upon the aforesaid with what taste and neatness you may possess. This picture can be copied to any size that may be desired for commercial purposes—carte-de-visite, cabinet, 4-4, or solar if it is desired in colours or India ink."

Mr. Daniel Bendann, whose portraiture we remember as of very high quality, says:—

"I place more stress upon cleanliness and proper arrangement of light than upon chemical excellence. I believe in simplicity; try to avoid humbug and sensationalism in pictures; endeavour to reproduce nature at its best, or, to use a homely phrase, 'with its best foot foremost.' I retouch but little; do not depend upon it at all. Five minutes is the average time required for retouching an imperial carte—oftener less than more. I do not permit my negatives to be touched by any substance whatever to give them a 'tooth' for retouching, not finding it necessary."

"My light is a due north skylight, the glass commencing seven feet from floor; pitch, fifty degrees precisely; glass part, fifteen feet wide and fourteen feet high. I use six opaque curtains on spring

rollers; in winter I scarcely ever make use of them. The above style of light I have always found the best; having thoroughly tried and built every other kind, I hold to that opinion. I can make every style and effect under it, inclusive of groups of ten to twelve persons: time of sitting, from ten to thirty seconds; children, two to five seconds. I do not believe in using reflectors, excepting in Rembrandts or isolated cases. They are false, and distort."

The last quoted sentence is somewhat puzzling. That by misuse of reflectors false and unnatural lights, destructive of true likeness, may be produced, is, of course, true; but reflecting screens can scarcely be said to distort. We next have from Mr. H. C. Wilt a printing and toning formula, by which, he states, he can treat a thousand card pictures with one grain of chloride of gold. Here is the formula:—

"Sensitizing Bath—forty grains; about one drop of conc. liquid ammonia to five ounces of solution; one ounce pure glycerine to a quart of solution; half an ounce nitrate of ammonia to a quart of solution; pulverised alum to a quart, about O. Shake well and leave to stand over night; filter, when it is ready for use. We use mostly brilliant paper, floating when warm about one and a-half minutes; cold weather, two minutes. After printing, soak the prints in a weak solution of chloride of sodium or common rock salt, a lump about so O to half a gallon of soft filtered water; when fully dissolved, soak the prints in this solution for a quarter of a minute; they are three-quarters toned then. Wash them in clean, soft water once or twice, then tone at once quickly. (Have ready), take fifteen grains chloride of gold, adding one tablespoonful of whiteing; then pour thereon boiling water until it changes from yellow to white, which will take from a pint and a half to a quart of boiling water. Do this in a bowl or dish; let cool, filter, and this is your stock toning. It will keep for years. To four ounces of this toning stock add one quart of blood-warm water. You are ready to tone 500 to 1,000 card photos. Keep up the temperature to about blood heat, and they will tone quickly, when wash and fix in hypo. soda, one ounce soda to twelve of water; fix ten to twelve minutes. (Caution.—You can easily over-salt and over-tone.) By this means you can tone on an average 1,000 card pictures with one grain chloride of gold, the most economical plan I know of. Having experimented for years, we now work thus. If the prints are over-salted or over-toned, they will look hard, grey, spotted, and coarse."

"After retouching a varnished negative, I lay the negative flat, face up, and warm, when the varnish melts, and the pencilling sinks or penetrates, and the varnish, being soft, covers over, and when dry prints much softer. You can also take a negative and set the intense side angling towards the light or sunny side; and, setting still or moving, you will find it to print softer than setting straight toward the sun; setting the thin side towards the sun, it will print much quicker and coarser. By thus angling a much softer and finer print can be obtained. Try it."

Mr. R. Benecke, of St. Louis, gives details of a negative bath with a large proportion of glycerine, which effectually checks any tendency to drying of the film during long exposure. Here it is:—

"Silver Bath.—Mix one part of good glycerine and three parts of water; put a few grains of nitrate of silver into it, and expose it to sunlight for a week or two. Make your silver bath of this in the usual way, using about thirty grains of silver to the ounce of fluid. Acidify with nitric acid. I have been using this bath now for over two years, for in and out-door work. The advantage is, a plate sensitized in it will keep good for hours. In going great distances I use the precaution to carry my plateholder wrapped in a wet cloth, after wetting it in and outside—the plateholder, I mean."

A large number of the communications contain the ordinary formulæ in use almost universally: a silver bath of from thirty to forty grains; iron solution of from fifteen to twenty grains to the ounce of water; printing bath from forty to fifty grains, in many cases with the addition of alum, as suggested by Mr. Anthony; and in almost every instance the sensitive paper is fumed. Borax is a good deal used to neutralise the toning bath, rule of thumb being the chief guide as to proportion. One gentleman uses equal proportions (about eighteen grains of each) of Epsom salts (sulphate of magnesia) in his developer. Almost all seem alive to the necessity of care and skill as of more vital importance than special formulæ. One states that you cannot say *how* you take a good picture, but that you must "feel it in your bones." Another recalls the "old, old story—chemicals worked with brains." Another says: "The great secret is to take lots of pains;" and no one will doubt that he is right.



## ON DEVELOPED PRINTS.

BY DR. LIESEGANG.

It is sometimes useful in photography, as well as in other branches, to look over results obtained many years ago. Thus, I lately found a collection of old plain paper prints, some of them printed on plain salted paper till the lights became of a deep blue colour, and bleached in an acid gold solution, a process much *en vogue* twenty years since. Those kept unmounted in a portfolio were unaltered, very rich in tone, the lights being yet white and pure, and all the half-tones of the negatives were certainly preserved. All those prints mounted on cardboard are yellowish and faded in the half-tones.

There were a few dozen large developed prints in the collection, made, as far as I can remember, fourteen years back. All those were mounted, and not one has changed in appearance. They were prepared after Sellbach's process. I do not know whether the formula has ever been published in England, but believe it might do some good to draw the attention of photographers to it who find difficulties in getting brilliant prints of a good tone by developing. Last month I saw photographers from Siberia and from Brazil, who told me they always used this process with good results. Thus it seems to stand all climates. The process is well suited for solar printing. To prepare the paper make the following solution:—

Rain water	...	...	...	2 ounces
Tapioca	...	...	...	20 grains
Iodide potassium	...	...	...	10 "
Chloride potassium	...	...	...	40 "
Lemon juice	...	...	...	16 drops

Mix the tapioca with a little water, dissolve the salts in the two ounces of water, add the lemon juice, and boil. Add the tapioca to the hot solution, and stir well in order to obtain a clear solution with no lumps in it.

This mixture is applied to the plain paper with a sponge, and with a second clean sponge it is lightly rubbed in, without in any way impairing the surface of the paper. After drying, the paper keeps unaltered for a long time. If it show red spots or stripes, do not care for them—they will disappear in the nitrate bath.

For sensitizing the paper use a solution composed of—

Water	...	...	...	2 ounces
Nitrate of silver	...	...	...	60 to 100 grains
Citric acid	...	...	...	5 "

The more contrast a negative shows, the less silver should be in the nitrate bath. Let the paper dry in a dark room: it is exceedingly sensitive to light. Print till the outlines of the image are visible; then mix one part of a saturated solution of gallic acid with four parts of rain water, and float the print on it, of course the image in contact with the solution. It soon becomes vigorous. You lift it from time to time at one edge to watch the progress of development. The print will be of a deep brown colour. As soon as the print is sufficiently developed, float it, in the same way, upon water. After a few minutes, steep the print in another bath of pure water, wash it well in several changes of water, tone in an old, weak gold bath, and fix in hyposulphite of soda; wash as usual. I do not know of any better process for developed prints having been published.

## ON PRE-LIGHTING THE NEGATIVE.

BY SAMUEL PRY.

SINCE the time—early in the present year—when you were good enough to insert a communication from me on the above subject, it has attracted much public attention, and the value of the principle has been admitted. As usual, some, who try it improperly, fail, and denounce the thing; others condemn it without trying. As the time of year is approaching when, if there is anything in it, it would be

of value, I may perhaps ask you to give me a little space to refer to some practice with it; and, in the first place, to suggest a crucial experiment which, in my view, includes the whole question.

Take an ordinary carte camera, with a shifting back to take two pictures on one plate; focus a three-quarter inch lens and bust as usual for vignettes, having a very light vignette background behind. Give a suitable exposure (say fifteen seconds); now remove the light-coloured background, and place a dark one behind; give the second picture also exactly the same time; now develop both at once, and what is the result? We all know perfectly what it is: that if fifteen seconds is the right time with a light background, it is quite insufficient with a dark one. A very obvious difference is seen in the two pictures, that on the dark ground being quite under-exposed. In this case the light background plays the part of the opal glass.

It is in dark weather, and with large pictures, that the advantage of the opal pre-lighting is most obvious. In working with a lens to take twelve-inch portraits—which requires exactly three times the exposure necessary for a carte—I am able to shorten fully one-half. This is a most important matter.

I propose to exhibit at the South London Society's Technical Meeting on the 15th, a 17×14 negative taken of the president, to illustrate the principle. The day when he sat to me was an intensely hot afternoon in August, about half-past three, with a stifling, yellowish haze very bad for photography. The exposure was forty seconds; and nothing under two minutes would have sufficed without the pre-lighting.

Some who have given an inordinate length to the pre-lighting get only fog for their trouble; those who have given insufficient find no result. In taking groups it is most valuable.

## NEGLIGENCE IN WASHING NEGATIVES.

M. L. G. KLEFFEL calls attention to the serious consequences of varnishing negatives before they have been sufficiently washed, and complains that frequently the reason of a varnish not adhering to the glass is put down to the former not being of good quality, while in reality it is not the varnish, but the carelessness of the operator, that is at fault. If the defective film is not much handled, the fault may not be apparent for some time; but as soon as you begin to work upon the surface—retouching, perhaps, with a pointed pencil—the lac breaks away, and leaves the image bare and unprotected.

In a recent number of the *Notizen* M. Kleffel quotes an instance of a friend of his having forwarded him a negative, with the remark that the varnish he had used appeared quite unfit for the purpose, and requesting an examination of the film where it had left the glass on being touched by a soft lead pencil. As he was quite convinced the varnish was not at fault, he determined to examine the plate carefully, to ascertain the reason why it sprang so readily from the glass surface. A careful inspection under the microscope showed what he had before suspected, namely, the presence on the surface of tiny crystals on those portions of the negative where the varnish had sprung away. These crystals were of course nothing else but minute particles of hyposulphite of soda, which had crystallised out of the film as soon as the latter had become dry.

This proved very clearly that the plate had not been sufficiently washed, and that the fixing agent employed had not been entirely removed; hence it had been formed into crystals, which refused to combine with the varnish, and the latter, having no support, gave way as soon as it was touched by the pencil.

This fact, says M. Kleffel in conclusion, shows that if hyposulphite of soda is employed in fixing negatives, too much care cannot be taken afterwards in their subsequent washing.



## THE ACTION OF COLOURING MATTER UPON THE SENSITIVENESS OF SILVER SALTS.

THE *Photographische Mittheilungen*, speaking of Dr. Vogel's experiments with bromide of silver, states that recently M. Edmond Becquerel has communicated to the Paris Academy of Science the results of researches that have been undertaken on the subject, upon his invitation, by M. Deshaies, of the *Conservatoire des Arts et Metiers*. These experiments were undertaken with films stained with coralline and aniline green, and were crowned with perfect success. M. Deshaies did not, however, confine himself to the use of bromide of silver, but continued his experiments with iodide of silver also, and obtained similar results. Dr. Vogel confined himself to bromo-iodide of silver, and, as he found here a marked sensitiveness for the blue rays, he did not continue his experiments.

M. Becquerel, moreover, essayed a colouring matter which Dr. Vogel did not try, namely, the green chlorophyll. Although collodion tinted with this possessed but a very slight greenish tint, the spectrum image secured with it was far broader than that obtained with ordinary collodion. Uncoloured collodion gave a picture between the ultra-violet and the blue—that is, the lines G and F—with the well-known maximum of energy near G; while with chlorophyll the greatest action was from the ultra-violet to line E in the green, while at the same time a weaker, but more noticeable, impression from E to B in the red, with a vigorous mark between C and D, was to be seen. On closer examination of the spectrum image, a second mark, of less intensity, was visible near the principal ones towards the red between C and D, and other weaker marks appeared in the green.

The most important confirmation of Dr. Vogel's discovery is afforded by the circumstance that the marks between C and D correspond with the absorption lines of the chlorophyll contained in the collodion. This result Becquerel obtained with every plate, and with various samples of collodion containing different quantities of chlorophyll dissolved in it.

It is interesting to observe that M. Becquerel does not seek to explain the cause of Vogel's results by attributing them to the action of continuing rays in the same way as Dr. van Monckhoven.

## EXPERIENCE WITH DRY PLATES.

BY J. BRIER, JUN.

IN answer to your request, I send some of my experiences with dry plates during the present year. I commenced with Capt. Abney's albumen beer process, and found it very good at first, but I had a great failure with one lot, through getting some fresh beer, which contained a great amount of salt, and made the plates slower day by day, so that the plates exposed two and three weeks after preparation were utterly under-exposed compared with the trial plates exposed soon after preparation. I found that applying a wash of aceto-nitrate of silver, as in Mr. England's process, made the plates more sensitive, and that the same method of preparation applied to pure bromide films gave plates nearly as quick as the wet, and without blurring, though no backing was used. During the spring I made a thorough set of experiments on the best way of drying plates. I had previously dried my plates (gum-gallic and collodio-bromide) in a box with an iron bottom and Bunsen's burner underneath, and a lantern chimney at the top. The result was, that I found drying spontaneously in a well-ventilated painted wooden box to be the best method. The box holds about a cubic yard of air. Each plate rests with the long thick edge at the bottom on two glass supports laid on fourfold blotting-paper, and shaped like a double-headed mushroom, and the back of the plate rests against two mahogany pegs in the side of the drying box.

I leave the plates undisturbed for at least twenty-four

hours, for if the box is opened before they are dry, there is sure to be a mark across the plate. I found that inserting a leaden trough of sulphuric acid dried the plates in two hours, but it made them less sensitive, especially for about two inches at the thin end, which, of course, would not do at all. It is well to nail the box up against a wall, as the air is driest at the top of a room, especially if the workroom is a cellar, as mine is, I am sorry to say.

In June we had some very fine weather, which stopped my supply of tap water, so I had to take to a process which needed but little washing. I used Mr. Davies' albumen beer process very successfully, but found them quite as slow as the old Taupenot plates; and the uncertain quality of beer led me to seek a substitute, which I found in Cassava gum, which is a lightly calcined powder used in calico printing for thickening colour; it is soluble in cold water (or should be, if sufficiently calcined); it is not as fond of moisture as gum-arabic, and does not produce the faintest trace of blistering in a film on albumenized glass; it may be used with pyrogallie, gallic, or acetate of morphia, to apply to a thoroughly washed, highly bromo-iodized film, but a backing will be required. I use a mixture of lampblack ground with india-rubber solution, benzine, and Bates' black varnish; this is painted on the back of the plate, and dries immediately. It is easily removed by moistening with water, and rubbing off in lumps with a piece of ink-eraser or india-rubber; and as it is mixed with rubber solution, it never gives off any dust to spoil the films.

But my practice has satisfied me that the best results are to be obtained on plates which do not require staining or backing to prevent blurring on the back of the glass and irradiation in the film. Albuminate of silver seems to answer this purpose most effectually. I like Mr. England's method of applying it, but as I have to consider my water in washing, I have devised a simpler method, which is quite as effectual. Here is the process. I make the following solutions:—

No. 1.—Plain prepared albumen	...	2 drachms
Twenty-grain solution of bromide of potass	...	$\frac{1}{4}$ drachm
Forty-grain solution of nitrate of silver	...	1 "
Strongest ammonia liquid	...	$\frac{1}{2}$ "
Water	...	4 $\frac{1}{2}$ drachms

This solution is sufficient for six 8×5 plates, does not need filtering, and will keep a week or so in the dark in a stoppered bottle.

No. 2.—Light Cassava gum	...	20 grains
Acetate of morphia	...	10 "
Acetic acid	...	20 minims
Sugar-candy	...	5 grains
Distilled water	...	1 ounce
Saturated solution of carbolic acid	...	2 drops

This keeps well, and must be filtered through scoured flax after coating each plate; it can be used till it gets weak.

I use patent-plate glass albumenized with a solution of one to forty of distilled water. The plates are put in the drying-box to keep them free from dust. The collodion must be made with a powdery pyroxiline, with the addition of a grain each of bromide of cadmium and ammonium to each ounce, with the usual iodiser. When the plate is coated, it must be allowed to set well, and immersed at least ten minutes in a forty-five grain, half-iodised, and thoroughly filtered nitrate bath. I filter through explosive gun-cotton rammed into the neck of an inverted wine bottle with the bottom knocked out.

When the plate is removed from the bath it is immersed for about five minutes in each of two dipping baths of distilled water, then drained a little, and flowed with the alkaline albuminate of silver solution No. 1 for about a minute, then washed most thoroughly under a tap of filtered common water, which may (excepting the first



small portion) be run into a bucket and put back in the filter for next plate; the plate is now drained, coated well with solution No. 2, and put in the drying-box on the glass rods.

The exposure should be about four times as long as for wet plates for (say) the first week after preparation, after which it should be increased as the plates get older. I have found this rule to apply to all dry plates except the Taupenot, and they cannot afford to lose any sensitiveness. I like Colonel Wortley's developer best for these plates, as it brings out the most detail with least fog.

I have no remarks to make but that I have found it the best process that I have worked (except the wet): but there is room yet for great improvement in dry plates. I intend to endeavour to add the albumen to the nitrate bath, and so do away with one of those tedious washings, for the simpler the preparation the greater will be the freedom from spots.

### PREPARATION OF PORCELAIN, ALBUMENIZED PRINTS, ETC., FOR WATER COLOURING.

BY CHARLES KNIGHT.

MUCH difficulty is often experienced by miniature painters, and those who tint photographs in water colours, in obtaining a surface free from greasiness which shall take the colour kindly, so that ox-gall and many other unpleasant preparations have been used when the more frequent and ready means—licking the surface with the tongue—has failed. I think, too, that there are very few who colour a great number of photographs but will be very glad to leave off this old and unpleasant habit, if they can find an inexpensive, pleasant, and at the same time a more efficient preparation.

Let the reader take the white of one egg (a French one will do for the purpose) and beat it to a froth; when the greater part has settled again, and has, to all appearance, returned to its former state, throw away the froth remaining, and mix with the liquid portion about ten ounces of water; then filter, and add afterwards a small piece of alum (if required to keep long) and cork the bottle after using.

With this preparation you can, without difficulty, overcome all greasiness, and a quantity costing one penny will keep at least a month.

### COMBINATION PRINTING.

BY F. M. BELL SMITH.\*

IN making composition pictures my plan and means are very simple. Having ascertained the number of figures to be introduced, their ages, sex, &c., I proceed with pencil or crayon to make a rough design. I then have a negative made of each, separately or in a number of small groups—say two or three in each—taking care to have the light coming in all the pictures from the same direction (unless the picture should be one where false lights are introduced, such as an interior with light from lamp on table, or in chandelier), and taking, also, particular care to have the relative sizes of the figures in proper proportion, not merely in perspective, but in relation one to another. Having now got a good negative of each of the parties, I get a print from each, and, roughly cutting them out, I arrange them on a sheet of cardboard covered with brown paper (a good quality of wrapping paper will do), pasting them on in the places I intend them to occupy in the finished picture. Now I see at once if I have got any in wrong proportion; if so, I get another negative taken at once, before proceeding further. When I have at last got all as I want them, I have the negatives retouched, and make my prints. Now, in making the prints for these composition pictures a great deal of care and judgment are required. We will say all the negatives are of

equal strength: well, if the picture is well arranged and in good perspective, there must be aerial perspective as well, and, therefore, the figures in the distance must be a great deal fainter and flatter than those in the foreground.

To produce this effect, care must be taken to print the prominent figures as strong as possible, and, in proportion to their size in perspective relation, make the others fainter. The plan I adopt is to print the distant figures very light, allowing the face to print more than the rest of the figure, and then sun them a little more in proportion as they are distant.

As most of these pictures are made for the purpose of copying, it becomes necessary to avoid showing the lines round the edges of the pictures which are cut out and pasted on the surface of the large picture. This I do by laying the print, after it is cut out and perfectly dry, face down on a piece of glass, and, with a sharp knife, paring the edges, so as to make the edge of figure, when pasted on, as thin as possible. With regard to the background, &c., I can only say that it requires an artist to paint one: but a very nice effect may be produced by selecting a nice view—say a grove of trees, or shore of a lake, river-bank, or some other pretty place—and enlarge it to the required size: print it on plain paper, and introduce your group in the way above described. A family might be taken in the grounds surrounding its house, with the residence in the background. The chief difficulty in the way of making family groups in interiors is, that the room and furniture would have to be carefully drawn by an artist.

In conclusion, I would say that my experience is, that there is no money in this kind of picture unless done with great dispatch, and a number of copies guaranteed at good prices. One hundred dollars is the lowest that any artist can afford to make one of these groups for.

### Correspondence.

#### TECHNICAL EXHIBITION MEETING OF THE SOUTH LONDON PHOTOGRAPHIC SOCIETY.

DEAR SIR.—I shall feel obliged if you will kindly permit me to call attention to the forthcoming Technical Exhibition Meeting of the South London Photographic Society, and to explain its nature.

It will consist, not of an exhibition of pictures, but of various appliances of an improved kind that are employed in producing pictures. We invite the exhibition of all kinds of apparatus that have any novelty or improvement beyond those in general use. We also invite short, pithy papers of a strictly technical character. Any one who has something fresh that he has worked out is invited to contribute, whether it is derived from the glass room, the dark room, or the field, especially if illustrated by a specimen. Patented articles, and the results of secret processes (if they be distinctly so stated) will be eligible.

Opportunity will be afforded, as far as possible, for working a process or making an experiment in the presence of the meeting. Questions may be asked in relation to the articles exhibited, and information may be given; but the time will not permit of discussion.

Full particulars of the time and place of meeting will be published next week; any further information I shall be happy to supply.—Yours faithfully,

EDWIN COCKING, Hon. Sec.

57, Queen's Road, Peckham, S.E.

### Proceedings of Societies.

#### LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE usual monthly meeting of this Association was held on Tuesday, the 29th ult., at the Free Public Library, William Brown Street, the Rev. J. D. RILEY, vice-president, in the chair.

The minutes of the previous meeting were read and passed.

\* *Anthony's Bulletin*.



Mr. J. A. FORREST exhibited several 16 by 12 negatives of the lake district, and two were chosen from which the presentation plate should be taken.

Mr. A. TYRER exhibited several fine prints taken at Miller's Dale, which were much admired, and a wish was expressed that, if the other negatives selected were not suitable, the presentation prints should be taken from Mr. Tyrer's.

The Chairman showed a number of prints of Pantasaph Church and Monastery, taken by the wet collodion process.

A portfolio of views taken at the Africau diamond diggings, called "Gems from the Diamond Land," by Messrs. Gray Brothers, were examined with much interest. They were kindly lent for exhibition by Mr. G. F. Chantrell.

Negatives were handed round taken by the new emulsion prepared by the Liverpool Dry Plate Company, and exposed by Mr. Weber, the Secretary, and others, all of which show the excellence of the emulsion.

Mr. PHIPPS handed round some negatives taken at Dolgelly with the same emulsion, and some taken of his own preparing. They were all so good that Mr. Phipps was requested to state his method of preparing them. Mr. Phipps explained that his first experiments in the preparation of the emulsion were made with collodion bromised with cadmium only; and though he tried various organic additions to induce density, he was unable to obtain it. Subsequently he tried a collodion containing bromides of cadmium and ammonium, and there was a marked improvement in the result. Finally, he used a collodion bromised with ammonium only, and this gave a still better result. The image was capable of being brought out by plain pyrogallie acid, by which the exposure could be judged of with great accuracy: there was no difficulty about the intensity. After the formation of the collodio-bromide it was filtered into a dish and allowed to thoroughly set, then washed with distilled, and subsequently with ordinary, water. The thick film, being broken up into small pieces to facilitate the removal of the soluble salts, was, after a thorough washing, squeezed as dry as practicable, and treated with three or four doses of alcohol (filtered) for the purpose of absorbing the water contained in the broken film. Finally, sufficient of a mixture of ether and alcohol was added, and the operation was complete. No organic addition whatever was made to the collodion. He had kept emulsions prepared in this manner for about two months, and had no doubt it would be found to possess indefinite keeping qualities. The plates were prepared by flowing over the collodion in the usual way, and allowing it to dry. In developing he followed the printed instructions issued by the Liverpool Dry Plate Company. Great latitude was allowable in the exposure. If the preliminary treatment with plain pyro showed that the plate was over-exposed, it could be continued until all the detail was out, and intensified by the addition of acid silver. He exhibited a negative developed in this manner. If the light was bad, the strong alkaline developer was preferable. Mr. Phipps promised to experiment further, and give definite formulæ at the next meeting.

Mr. LEWIS HUGHES then described, by the aid of diagrams, several improvements he had been making in the working of the heliostat attached to his camera for enlarging microscopical objects. Some exceedingly fine microscopic enlargements were exhibited by Mr. Hughes.

The meeting was shortly afterwards adjourned.

#### PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.\*

A MEETING was held on June 2nd. President, H. J. NEWTON; Secretary, O. G. MASON.

Mr. CHISHOLM stated that he had been making experiments in the production of enamels on glass. He had used a blue glass, and also a red glass, on which he made silver transparencies, and baked them in a window glass stainer's oven, producing a brilliant yellow picture having all the beautiful gradation of tone without loss of detail.

Mr. CHISHOLM said that he had met a gentleman who was using chloride of palladium as a re-developer, and he considered the compound useless for such a purpose.

The PRESIDENT stated that he had used it for a year, and it had worked well. It was just as intense when varnished as when wet. His formula for an intensifier to strengthen negatives was as follows: water, one ounce; iodide of ammonium, three grains; nitrate of uranium, five grains; proto-sulphate of iron, ten grains, put together in the order given, not to be used until after two days old. At any time for two years after that it would be good, and the

older the better. He generally used it about half the strength given, by reducing with water.

Mr. BIERSTADT inquired if this re-developer would intensify strong enough for fine work.

The PRESIDENT.—You can obtain great intensity for that by using bichloride of mercury.

Mr. BIERSTADT.—I do not like the bichloride of mercury. The work of the Actinic Engraving Company is done in that way, but I do not like to use it.

After the appointment of an experimental committee, the meeting adjourned.

### Talk in the Studio.

THE MAYOR OF LIVERPOOL.—We have been favoured by Messrs. Vandyke and Brown with some admirable card portraits of Andrew Barclay Walker, Mayor of Liverpool, who has recently earned the lasting gratitude of that city by his munificent gift of the new art gallery to the town. The photographs are unusually fine, and illustrate how skillful touching may give finish without destroying texture, vigour, or likeness.

SCIENCE IN THE PHOTOGRAPHIC SOCIETY.—A correspondent sends us a cutting from *Nature*, and some angry comments thereon. The paragraph sent announces the forthcoming exhibition, and hopes that the present opportunity will not be allowed to pass without illustrations of what photography has done to advance pure science, concluding by remarking that "Mr. John Spiller, F.C.S., has been elected president, and Mr. R. J. Friswell, F.C.S., Hon. Sec. of the Society, so that the interest of science will have a good chance of being in future attended to." Our correspondent protests against the tone of patronage assumed by our contemporary, and adds that "photography and the Photographic Society have done quite as much for pure science as pure science has done for them." He further begs to remark that without questioning the scientific positions of the esteemed gentlemen named, it is an insult to assume that men like Mr. James Glaisher, F.R.S., and Mr. Baden Pritchard, F.C.S., were inferior in scientific position, 'so that,' under their presidency and secretaryship, the interests of science could not be looked after.' We think our correspondent is unnecessarily sensitive. The paragraph was doubtless intended to be friendly, and if there is anything questionable in the wording, it probably arises from ignorance, our contemporary possibly not knowing who were the former officers of the society, as it would scarcely have implied that the director of the Meteorological Department at the Royal Observatory was not a fitting representative of science in the Photographic Society.

SEMI-OPAQUE GLASS.—The *English Mechanic* gives the following as a matt varnish:—"To half an ounce of white hard varnish add two ounces of methylated spirit; shake up well, and allow it to settle for an hour or two. Clean very carefully a plate of glass, and coat with the varnish. When dry, a semi-opaque film of exquisite fineness will be left on the glass, which answers well as a substitute for grinding the glass."

OBITUARY.—On the 30th ultimo, suddenly, after a long and severe illness, J. F. Trull, photographer, Falmouth, aged 45 years.

REPORT OF THE PATENT OFFICE.—The report of the Patent Office for 1873 just issued contains the usual details of the number of patents applied for, granted, &c., and accounts of income and out-going expenses. It appears that during 1873 there were in all 4,294 applications, of which 1,388 were only provisionally specified. Of these 68 applicants obtained grants of letters patent, but neglected to file final specifications, and 1,320 did not proceed after the six months' provisional protection had expired. 2,906 completed their specifications and obtained letters patent. In the preceding year, 1872, there were 3,970 applications, and 2,745 completed patents. Of the specifications sent in, 216 were filed complete at once without any prior provisional specification. During the year 737 patents paid the £50 stamp duty due at the end of three years (these were patents taken out during the year 1870, in which there were 3,405 applications, and 2,146 completed patents). There were also 232 patents on which the duty of £100, due at the end of the seventh year, was paid (these were patents taken out in 1866, in which year there were 3,453 applications, and 2,106 complete patents; the £50 duty on them was paid in 1869, when 578 paid that duty). There were 14 patentees who

\* Condensed from *Anthony's Photographic Bulletin*.



required duplicate copies of lost original patents. There were 3 new patents granted under the special provisions for extension made in the Act of 1852. The total revenue of the office during the year was £144,761, of which £2,290 was derived from the sale of specifications, &c., and the remainder from the fees on patents. Against this are to be set costs and charges to the amount of £49,477, leaving a surplus paid to the Treasury of £95,284. The corresponding amount last year was £85,611; and the total amount from 1852 is £1,108,204.

**WILSON'S PHOTOGRAPHY.**—Mr. Wilson has long enjoyed the practical monopoly of Scottish scenery, as a photographic artist. His work is generally good, and often merits higher commendation. His prints are always clear and uniformly sharp, if sometimes a little dark; and, in general, his selection of the point of view leaves little to be desired. For extent of view and management of distances he has never been surpassed, inferior workmen being generally contented if they can secure "bits" here and there, all foreground and middle distance. In several of his mountain views our artist is particularly happy in the way in which he manages to pick out on the plate the bright patches of white, which exactly imitate the latest vestiges of the winter's snow still lingering in shady hollows among the hills. The richly wooded scenery of the glens, the vast expanse of the mountain sides, the calm beauty of the lakes, are rendered with rare truth. The moonlight scene on the beach at Golspie will puzzle many a tyro in the art to know "how it's done." Perhaps the pure atmosphere of Aberdeen, in which city Mr. Wilson has taken up his residence, may have something to do with the printing. The specimens which he has sent us comprise views in all parts of the country, but they form portions of the various series which he has prepared for tourists who may wish to bring away with them some memento of their trip of a higher class than the common things usually sold as "Views."—*Bookseller.*

**FOR RETOUCHERS.**—Louis Burno says, in our "Western" namesake:—"Take the bath brick used for scouring purposes, shave it very fine with a knife, then rub thoroughly with the fingers, and sift through fine muslin into a bottle or box. Rub over negative in usual manner."

## To Correspondents.

**D. A.—1.** In preparing your collodion, something depends upon the nature of the pyroxylene you use. If you want to employ methylated alcohol and ether, take of each a pound or twenty fluid ounces, and dissolve in it about two drachms of pyroxylene. Try iodizing with ninety grains each of the iodides of antimony and cadmium, and fifty of the bromide of ammonium. 2. What sort of an emulsion do you wish to prepare—bromide emulsion for dry plates, or collodio-chloride emulsion for positive printing? You will find ample directions for both in our YEAR-BOOK for 1874.

**CHARLES KNIGHT.**—We should advise your mounting first and glazing afterwards, the course most foreign photographers adopt; the moisture from the mounting material is otherwise apt to impair the glaze of the prints. You might, however, mount with india-rubber cement—india-rubber dissolved in benzole—without any fear, you should think, of injuring the glaze. A strong bath, newly made, is sometimes apt to bite into the collodion plate as you describe. You do not send any enclosure, as stated in your note. The carte of the Crown Princess of Prussia is a most successful example of out-door photography.

—To employ an old dipping bath for sensitizing paper it is necessary first to remove the iodide. Make a solution of citric acid, sixteen grains to the ounce of water, and add one drachm of this for every eight ounces of solution. Add some ammonia, drop by drop, until red litmus paper becomes blue. Filter, and then make up the silver solution to the strength you require for sensitizing paper.

**W. A. B.**—Marine glue may be used as a cement for glass vessels intended for holding solutions of nitrate of silver with perfect safety. It is made by incorporating india-rubber and resin; but it can be purchased more easily than made. It is generally kept at tool shops. 2. It is probable that a cork thoroughly saturated with paraffine might be used in contact with nitrate of silver solution without injury; but we cannot say with certainty whether it would be easy to sufficiently saturate the cork with the protecting substance. A glass stopper is safer.

**T. H.**—It is desirable to select a night when the moon is very bright to secure a good photographic image of its face, so as to secure, as nearly as possible, an instantaneous picture. If any sensibly prolonged exposure be given, the image will be blurred, from the motion of the moon and earth. 2. On a very bright night the brilliantly illuminated edges of clouds surrounding the moon may be secured on the plate.

**W. D.**—Metallic silver in powder, as precipitated from a solution by means of zinc, should be very easily dissolved in equal parts of nitric acid and water; but it is well to use the aid of heat. Set the vessel containing it on the hob. 2. The term "brunette" describes a dark complexion, of the swarthy or olive type, and is generally accompanied by dark hair and eyes; "blonde" describes a fair complexion, skin generally of a pink and white tint, with hair golden, flaxen, or auburn, and eyes generally blue or grey.

**W. G.**—We fear that the advice and information you desire cannot be satisfactorily or decisively given in a few words. The best mode of enlarging is a very moot question, about which much discussion has occurred in our pages, and in photographic societies during the last year or two. There are several modes of enlarging by which good results can be produced; but there is none so simple that a person can readily take up without previous knowledge, and hope to succeed without gaining by experience and learning by failures. There is no work devoted to the subject, but our pages have contained many articles describing various methods. A little pamphlet, published by Mr. Solomon, of Red Lion Square, contains a good deal of information on the subject, especially in relation to enlarging by the aid of magnesium light, a plan which possesses many advantages. We cannot speak with certainty of the salary required by an operator who can undertake such work; probably about two guineas and a-half per week. Get the pamphlet we have recommended, and if you wish for information on any of the methods described, write again.

**H. T. B.**—The Autotype Company and the Woodbury Permanent Printing Company both undertake photo-mechanical printing; but on what terms we cannot tell you. They will doubtless supply the information on application.

**NORMANDY.**—We regret that our information as to precise localities is insufficient to enable us to give satisfactory advice.

**ONE WHOSE AMBITION IS TO EXCEL.**—Your work generally is good; but the portraits are a little low in tone. A slight degree of additional intensity in the negatives would be an advantage. The developers used for your landscapes appear to have answered very well. A little longer exposure, and the same developer would have improved No. 4. Try the albumen process with a collodion substratum, as described in our last YEAR-BOOK. It is possible that bichromated glue may answer for the purpose you mention. Trial alone will certainly decide.

**R. T. J.**—Precipitating the silver in an old bath by means of caustic potash, washing the oxide thoroughly, and re-dissolving in nitric acid is one of the methods proposed many years ago, and, so far as we remember, practised with success. There is no objection to the plan at all that we see, except a little trouble and waste.

**C. B.**—No licence, registration, or formality of any kind is necessary to permit any one to commence practice as a professional photographer.

**H. H. K.**—The source of your trouble is, we think, a very simple one. In transferring the film to the wood you place it the wrong side up. If you place the film on the wood with the image resting on it uppermost, that image will, of course, disappear when you dissolve the film which supports it; but if you reverse the plan, and place the image side next the wood, the image, consisting of a black metallic powder, remains attached to the wood, although the film which covers it is dissolved. Another very simple but more tedious plan of getting an image upon wood without any interfering film consists in making an image in bichromated gelatine, as in the Albotype process, using paper instead of glass; then inking the gelatine image with greasy ink, and transferring to the wood block the impression in greasy ink.

**A MISGUIDED PHOTOGRAPHER** writes to complain of some errors and confusion which have occurred in the recent announcements in relation to the sizes of the pictures intended for the Crawshaw prize competition. Such errors are to be regretted; but, fortunately, they cannot do serious harm, as they are made at a time when all pictures intended for such competition must have been completed before the announcements in question were issued; and it is a pity to dwell upon things which are beyond remedy. The same remark will apply to the comments of "E. T. G.," who suggests that in the circular sent out by the society, the Crawshaw prize list, for want of a distinctive heading, looks like a list of prizes offered by the society.

**LOUIS BUDERUS.**—We regret that your experience with the house in question has been so unsatisfactory, but we of course have no more responsibility or power in the matter in relation to dealers whose announcements appear in our pages, than have the Post Office authorities, who bring these pages to you. We transgressed our usual practice, which is never to take any part in any business transactions of the kind, so far as to call a second time and state your complaint, and were told the goods have been sent off.

**THE LITTLE MAN IN GREEN.**—Your letter reached us just as we were going to press, too late in any case for insertion this week. See above; but we will consider the matter for next week.

**W. H. HARRIS.**—Box safely received. Many thanks. We should have acknowledged it by post, but we have not your address.

**E. H. SPEIGHT.**—Received. Thanks. In our next. Several Correspondents in our next.



## The Photographic News, October 16, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### WOOD ORNAMENTATION BY PHOTOGRAPHY—REVERSING THE IMAGE IN THE CAMERA—ON THE SIDE OF THE PUBLIC—PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

*Wood Ornamentation by Photography.*—An application of photography has recently come under our attention, which is so simple that one can only wonder it has not been more generally adopted. It is the ornamentation of little boxes and cabinets of yellow wood with outline photographs of ferns and flowers, the tops and sides of these receptacles having received an impress by means of light, or been covered with a veneer or coating of some sort, bearing the image. It would be easy, no doubt, to cover the box with bichromate solution of an agreeable tint, dispose of the ferns in an artistic manner, and allow the light to act in the ordinary way; and it would not even matter at all if the top of the cabinets were curved, for the leaves could be pressed in contact just as well. The examples we have seen of this kind of work—outlines of maidenhair and other pretty ferns delicately limned on the exterior of little work-boxes and such like—were very pleasing; and we have no doubt such impressions could be produced with little trouble. At first sight the designs appear to be inlaid like mosaic work, and it is only on a closer inspection that you see there is no division between the straw-coloured wood and the brown or chocolate ground. The expense of producing designs of the same kind by painting or varnishing would doubtless be considerable, compared to the simple depiction of them by means of photography, and we doubt not there are other purposes for which such ornamentation would be just as appropriate and welcome as upon the wooden boxes we refer to.

*Reversing the Image in the Camera.*—According to the *Railway News*, we are informed that Mr. Bryne, a photographer at Margate, has just perfected an ingenious piece of apparatus, which, when placed in front of the camera, throws the image upon the screen in its proper position. The name chosen for this instrument is the "Rectoprion," which means "to show upright," and by its aid photographers will be saved the trouble of having to view things upside down. Moreover, we are informed that the image is to be seen with the instrument three times its usual brilliancy and colour; and the *Railway News* trusts that every photographer will possess himself of this useful and delightful addition to the camera. We are quite unaware of the nature of this instrument, but we should doubt very much whether the same would be either useful or delightful. Most photographers would tell you that it is perfectly immaterial to them whether they see the picture upside down or not; and, indeed, so accustomed are they to the matter, that they never remark that there is anything peculiar about the image. As to adding to the brilliancy and intensity of light and colour, this could only be the case in the event of the image being, at the same time, much reduced in size, for otherwise, by adding a correcting glass, there would be a loss, rather than a gain, in brilliancy. It may not, by the way, be generally known that our own eyes see everything upside down; thus, if you dissect the eye of any animal, and take the same into a room illuminated simply by a candle, you will perceive, on looking at the retina of the eye, that the flame of the candle is there reflected upside down, and not in its proper position. Whether our brain corrects this or not is a moot point; but certain it is that, so far as the retina or focussing screen of our eye is concerned, the world is therein depicted topsy-turvy.

*On the Side of the Public.*—A little while ago a paper appeared in one of the popular magazines entitled "On the Side of the Maids," which took up the cudgels on behalf of domestic servants against their mistresses. In the same way, we think, something might be written on behalf of

the public against the photographer. We hear from time to time a good deal about how the public ought to be treated, oppressed, and put down; how they should be made to conform blindly to regulations, and deport and carry themselves, and not breathe a syllable of their hopes and wishes until they are outside the studio again. "We know what you are going to say; now pray be quiet, and do not talk nonsense," should be the gist of the photographer's suave remarks to his sitter, according to some authorities. We do not mean to say our friends are wrong; on the contrary, in most cases they are perfectly right, for a photographer's practice and experience are generally very great, and he knows quite well what a lame result will probably be the issue if he allow his sitter, and not himself, to order matters. But for all that, there is something to be said on the side of the public, and the humble suggestions they sometimes make are not always so worthless as they are held to be. The other day we heard two ladies—sisters, and nearly of a height—complaining of a group they recently had taken: a London picture had not given satisfaction, and they believed if the model who had been sitting had been permitted to stand, a more pleasing effect would have been secured, as the figure of the former was rather slimmer and better proportioned than the other. So they had another picture taken at a sea-side studio this time, politely requesting that the desired grouping might be adopted. The photographer was amiable to the last, but inflexible, the lady who was a shade the taller being again requested to sit, and the other to stand; he knew no other law than this, and had to be obeyed. No matter what the forms of the models might be, his notions of art seemed confined to this point, that the taller model must invariably sit. The ladies complained they would be only too glad if they could get a picture to their liking, but such a thing seemed really impossible, and after their two-fold experience they had of course given up the matter as impracticable.

*Photographers' Benevolent Association.*—It is gratifying to learn that the Photographers' Benevolent Association bids fair to be successful. At the last monthly meeting of the society a dozen new members were elected, and the work of the society inaugurated by a grant of money to a sick and needy photographer. Funds seem to be flowing in very satisfactorily, and subscriptions and donations will doubtless be still more plentiful when the society is more widely known and the roll of members become more lengthy. One point in connection with the body deserves particular mention: during the past season the secretary received several applications from employers in different parts of the country for qualified assistants, and was enabled, in some instances, to supply the information asked for, so that there is a likelihood of the society helping the whole, as well as the sick, and becoming, as it were, a sort of medium between those who want assistance and those who can give it. This will be a very useful feature of the institution if it be properly cultivated.

### GERMAN CORRESPONDENCE.

#### LANDSCAPE PHOTOGRAPHY—THE EFFECT OF PERSPECTIVE. BY DR. H. VOGEL.

I AM out of town, at a watering place, in order to wash off for once the dust of the city in the briny waves of the Baltic. It was my intention to do nothing—absolutely nothing; but I could not resist the temptation to take along some photographic apparatus. I believe photographers are like actors: after one has worn out a pair of shoes on the stage he cannot leave it: and after a photographer has used up a pound of nitrate of silver he is wedded to the dark chamber for life. The amateur is almost in a still worse condition. Many a pretty study excites me to work, for the coast here is highly romantic. Mighty dark cliffs, similar to the Shakespeare Cliff at Dover, rise here out of the water, the summits crowned with the primeval forest of the finest beech and



oak. Deep gorges intersect the rocks, mountain torrents rush down towards the sea, and immense boulders cover the beach. Further inland you meet with curiously-formed giant tombs, with numerous remnants of flint implements and weapons peculiarly formed, fortifications, and heathen altars, all relics of a people long ago passed away, and of whom we only know by legends. Unfortunately the intrusive element, in the shape of farmers' boys and servant girls, interferes with taking the picture of these remnants of the remote past, for these people believe that I am an itinerant photographer, and ask me regularly how much I charge for half a dozen cards. Wind and weather also interfere very frequently: but seldom are the leaves quiet, and still more rarely am I favoured by a ray of sunlight which brings light and shade into the landscape. Here is abundance of splendid material for such show pictures as have been made by Breese in England. I mean his splendid instantaneous photographs, where surging waves and overhanging clouds are illuminated by a sudden burst of sunshine—pictures that are made daily at the Falls of Niagara, but which succeed so rarely in the less favourable atmosphere of Germany. Unfortunately we do not meet with these pictures any longer in the shops, for Breese is reported dead, and his successor has not been found yet, although the beautiful transparencies were readily bought, in spite of their high price. It is, anyway, peculiar that the artistic landscape photographers do not succeed on the Continent. Such magnificent pictures as are made by Robinson and Cherrill we look for in vain in Germany, and it is significant enough that English photographers make our own a rather strong competition in the landscape line.

It seems that generally the photographer is satisfied with taking the view that most people call for, but he does not care how the illumination is, or if the light comes from the front, from behind, or sideways. The travelling photographer is satisfied to make in the shortest time as many pictures as possible, and to travel through the country as quickly as possible. Under these circumstances, to wait for the finest effects of light and shade is out of the question.

This evil is mainly due to the public itself. It makes great pretensions when its own dear self is concerned. When a portrait is wanted, vanity comes into play; but with landscapes the case is entirely different. If only the outlines of the favourite spot are recognized, the public is satisfied, and does not ask whether the plate is over or under exposed, whether it is spotted or streaked—in fact, it accepts the meanest kind of work, provided it is cheap; and the best photographer, who would like to make the best kind of work, finds to his regret how little even educated people know to value his talents. Such indolence cannot, of course, promote progress.

There are very clever landscape photographers, particularly in the Alps. I refer, for instance, to Baldi and Wurthole in Salzburg, Johannes in Portenkirchen, and Lotze in Bozen. In North Germany we had formerly artists of equal reputation, but it seems that they have lately turned their attention to other branches of photography. We must not forget that the Alps furnish the photographer with a much richer material than the flat plains of North Germany. In the Alps we can turn the camera in whatever direction we choose, and we will, almost in every instance, find a good subject. But it is different in a level country. Here it becomes difficult to fill out the picture. We find, for instance, a charming village surrounded by trees and woodland. We direct the camera towards it, and we get a picture. But how does it look? The village with the surrounding forest occupies a small strip in the centre of the picture; above it there is a wide blank space representing the sky, and below a broad space of tedious foreground in the shape of a large stubble field.

These drawbacks may be remedied by a lens with a long focus. Sky and foreground appear smaller, and the centre larger; but, unfortunately, the angle of view will decrease with a longer focus, and many a landscape which stretches

over a considerable horizontal surface cannot be taken with a long-focussed lens. It becomes, therefore, necessary to stick to a short-focussed lens, and thus it happens that we see many a marine view in which the tedious sky and the equally tedious foreground drive the artistic viewer to desperation. The painter easily circumvents these difficulties. He fills the sky with handsome clouds, lets the sun burst through them and throw wonderful reflexes on water and foreground, and brings in this manner harmony and poetry into a landscape where photographers despair on account of the monotony of the subject. Yes, the painters nowadays give a preference to the level country, where sky and foreground leave a clear field for the display of their fancies; while in mountainous regions like the Alps, the mountains themselves fill the picture from bottom to top.

In view of these miseries of the landscape photographer, it is really enjoyable to record some new conquest in the realm of geographical photography. These are the pictures from the desert expedition by Gerhard Rolf, taken by Ph. Remelé. Rolf's expedition was organized by the Viceroy of Egypt, and entered the sandy waste of the desert for the purpose of tracing the roads of the caravans, the oases, the geological formations, &c. Zoologist, botanist, astronomers, and mineralogist accompanied the expedition. It is the first African one which was accompanied by a photographer. The oases "Charzeh" and "Tarafre" were reached, and strange rocky landscapes and interesting ruins of ancient Egyptian temples were discovered, and an abundance of the most curious views were taken, until the further progress of the enterprise was stopped by an endless chain of sandhills. Of all these strange objects Remelé has made splendid pictures, which together form an album of about eighty pictures. The Viceroy has ordered hundreds of these to be made at his own expense, and intends to present them to prominent learned institutions.

Lately I made an observation on the peculiar effect of perspective in photography. A sculptor constructed a splendid monument—a kind of mausoleum. The same presented a cubical base, surmounted by a cupola. The plaster model of the building was about three feet high. The building itself would reach a height of sixty feet. To show his work, the sculptor ordered a photograph to be made of the model, if possible with landscape surroundings. After much trouble, the photographer fulfilled all these conditions. He placed the model in front of a landscape background, on an artificial hill, in which pots with cypress and myrtle were buried. A plate of sixteen inches was made from this model. Everything succeeded, and the photographer was satisfied with his work, and others who saw it praised it highly. The picture was handed to the sculptor, but he was by no means delighted. He did not say a word, paid the bill, and left. He took it to the Artists' Society, and demonstrated to his colleagues that photography is utterly unable to make a correct picture of anything. We experience here quite often that artists take a delight in taking hold of inferior pictures, and to demonstrate from them the incapacity of photography.

The mausoleum mentioned above made, indeed, a rather peculiar impression, which was felt by persons who did not understand anything about art. The landscape looked quite natural, but the building unnatural, although very few could explain why. The reason of this lay in the perspective proportions. If we take a photograph of a cube one foot high, and place the objective on a level with the cube, the edges will separate but little. If, on the other hand, we photograph a cubical building which is sixty feet high, and place the camera at the foot of the building, then the lines of the cornices will very considerably tumble, as the artists call it, and the higher the building is the more marked will this appear. The lines of the cornice did not fall sufficiently, and did not give the same impression a high building would make. The question arises, could this be avoided? At first sight this seems impossible. And still it can be done. If we photograph a cube, and place the objective at various



distances from the camera, we will find that the lines tumble more and more the closer we get to the cube. Such an approach is possible with a correct working wide-angle lens—as, for instance, the Zentmayer. Such leuses have sufficient depth, and make it possible to work at very short distances. If such an instrument had been employed in this instance, a splendid picture of the model would have been the result, which, also, would have made the impression of a large building. We often complain of the exaggerated perspective of wide-angle lenses: in this instance it would have been no disadvantage.—*Philadelphia Photographer.*

## A FEW WORDS ON THE BEER AND ALBUMEN PROCESS.

BY J. M. TURNBULL.\*

As I have had a good deal of experience this summer with this process and modifications of it, I may be allowed to give my opinion of it, and also a short account of a set of experiments I have lately tried with the different forms of it, in order to find out which is the best and most sensitive. Mr. Davies, in a paper which he read before the June meeting of this society (and from which I have taken my title), recommends the addition of more silver and pyrogallie acid to the beer and albumen. He says:—"If additional rapidity is needed, it is conferred by increasing the proportions of free silver and gallic or pyrogallie acid, and cautiously reducing the strength of the beer-albumen with distilled water." As some plates which were prepared in the beginning of the summer without the addition of either pyrogallie acid or silver were very sensitive, I felt very much inclined to doubt that this was the most rapid form of the beer and albumen process. I resolved to try this form of it against plates prepared with the omission of both silver and pyrogallie acid, and also Captain Abney's form of it, as given in the PHOTOGRAPHIC NEWS ALMANAC for this year. With regard to Mr. Davies' addition of silver to the beer, I had serious doubts of there really being any free silver in the preservative, as poured upon the plate, at all. Mr. Davies recommends the addition of one grain of silver to one ounce of beer. Now, I should think that there was enough of chlorides and organic matter in an ounce of strong sweet ale to reduce entirely the one grain of silver, and that should, by any chance, free silver be left in the beer, it would entirely be reduced on the addition of the pyrogallie acid and albumen, which would form some complex organic salts of silver. In my own trials of it I used two grains of silver to one ounce of beer. After adding the pyrogallie acid and albumen, some of the preservative was poured into a test tube, and a chloride added. I made several trials, but I really could not say that I detected free silver. I feel, however, that I should leave this an open question, as the colour of the beer—or, rather, the strong sweet ale—was rather high, which prevented the chloride of silver, if any was present, from being seen.

With regard to the addition of pyrogallie acid to the preservative, I have never before heard of it in connection with any dry process as a sensitive agent. Either it or gallic acid has been used in connection with the albumen process as a preservative, a final wash of any of them being said to confer great keeping qualities on the plates—my opinion of it, in connection with the beer and albumen process, being, that it has no sensitizing properties at all, and that it only acts as a preservative, and that unless the plates are intended to be kept a very long time, it had better be omitted from this process altogether.

With regard to the modification of the process as proposed by Captain Abney, I cannot say that I regard it as an improvement, but rather the reverse, as I can only look on it as a complication of what is in reality a very simple

matter.\* As worked by Mr. Davies, the preservative is applied at one application; but as proposed by Captain Abney, you have two preservatives, with a washing between. I therefore prefer Mr. Davies' plan as at once the simplest and best. There is little other difference, as both use the same materials, with the exception of the ammonia proposed by Captain Abney. Let us now shortly enquire of what possible use ammonia can be as employed with albumen and beer. Captain Abney says nothing in his article to the YEAR-BOOK of its use, but in a letter to the journals, the week after the publication of Mr. Davies' paper, he says, "I lay great stress on rendering the film alkaline; it is an important means for securing rapidity." (See PHOTOGRAPHIC NEWS, June 19th.) That the Captain is mistaken in this I will shortly show. In the meantime, let us enquire about the use of the ammonia. The Captain says: "To each white (of egg) one fluid drachm of ammonia must have been added." Now, if we add one drachm of ammonia to one ounce of albumen, the result is merely a mechanical mixture of the two. There is no acid to neutralize in albumen, and there can be very little, if any at all, in the film, after the free silver is washed off, at any rate; if there is any left, it has no effect whatever on the sensitiveness of the film, as my comparative trials with other plates showed. I therefore regard the addition of ammonia to the albumen and beer as simply useless, and only tending to complicate the process. The application of the mixed albumen and beer may therefore here be dispensed with, and also the separate washing, and the preservative applied as in Mr. Davies' method, which will at least save a great deal of time in the preparation of the plates. I may just as well say here, that instead of Captain Abney's method being more rapid, as he seems to think, it is actually slower than either Davies' method with the silver in the beer, or the other method without the silver and pyrogallie acid.

I will now shortly detail the experiments I made with the different plates. My first trials were between Davies' method, with the silver and pyro, and the other method, with only the plain beer and albumen. Plates were prepared in every way the same, the only difference being that the preservative in the one had two grains of silver to the ounce and one grain of pyrogallie acid, while the other was only the plain beer and albumen. The plates were exposed at the same time, on the same subject, and got precisely the same exposure, the light being very steady. I purposely under-exposed the plates, to see what difference there would be in the development. On developing them, the plate with the silver and pyro began to show slight traces of an image first; but the race is not always to the swift. After a while it began to lag, and the one with the plain beer to have the advantage. In the end both plates came up well, though both were under-exposed, and required a little forcing, the one without the silver being the best and most brilliant negative of the two, the other being flat and slightly fogged in comparison with the other; the one without silver being quite as well exposed as the other.

Another trial I had was with plates prepared with the same collodion and bath, the beer and albumen being also the same, but made up in the different proportions used by Mr. Davies and Captain Abney; and also the method without the silver and pyro. The plates were exposed one after the other on the same subject, without shifting the camera. They got exactly the same exposure; this time a full exposure was given. To give the plates equal justice in development, they were placed all three together in a flat tray. The preservative having been washed off, a three-grain solution of plain pyrogallie acid was poured over them all. In a short time a very faint trace of an image began to show on the plate by Davies' method, and

\* As Captain Abney's silence in relation to the questions raised may be misunderstood, it should be stated that he is at the present moment in Alexandria, or on his way thither, and will not return until after the transit of Venus in December.—Ed. P. N.

\* Read before the Edinburgh Photographic Society.



also the one with the plain beer, while Captain Abney's as yet showed nothing. I then added a few drops of ammonia, when the whole three began to come fully out, the plain beer leading, if anything.

With all my experience in photography, both wet and dry, I could not help a smile rising to my face as I thus held the dish in my hand, and waited to watch the race for first being developed, and thought of the plates being labelled on the back, "Davies," "Abney," and "Plain Beer;" and could not help exclaiming to myself, "May the best man win."

The plates being fully out, they were intensified with a little acid pyro and silver. The conclusion that I came to with regard to rapidity was, that the plate by Davies' method and the one with the plain beer were as near as possible equal, neither having the advantage, both being fully exposed; while the one by Captain Abney's method would have required a little more exposure to have made them equal. From Captain Abney's letter already spoken of, he seems to be under the impression that plates by Davies' method cannot well be developed by the alkaline method. Such is not the case, as plates by Davies' method have been developed with the alkaline development ever since it has been introduced. I have myself developed plates by this process with as strong an alkaline developer as it is possible to use.

I will now sum up by stating what I think is the best form, and also the simplest, of the beer and albumen process, and that is the keeping out of all silver, pyrogallie acid, and ammonia from the preservative, and using only the simplest mixture of plain beer and albumen, unless when the plates are required for very long keeping, then the one grain of pyrogallie acid to the ounce of beer should be added, when that would give what I am almost tempted to call indifferent keeping qualities. If additional rapidity is to be got by this process, I should think it would be in the direction of diluting the mixture of beer and albumen—to what extent I cannot at present say; but I should think to the extent of equal parts of water, or even double or treble that quantity. Any further experiments I make will be in this direction.

Having now spoken of the preparation of the plates, I need say nothing of their development, but would simply recommend anyone trying the process to follow the directions of Mr. Davies and Captain Abney, both of these gentlemen having stated them so clearly and ably that I need not add one word.

In conclusion, I would just say that I can endorse all that both of these gentlemen have claimed for the process, and that it is one of the best, if not the very best and simplest dry process which we at present have; and if I have contributed to simplify it still further, my object will have been fulfilled.

### SPRIT OF THE JOURNALS.

BY W. H. DAVIES.\*

WELL, the title seems an odd one, seeing that it is four months ago since the first of this projected series of papers was brought before the society, and that business avocations have prevented me from being present at a single one of the out-door meetings held since then. By-the-bye, I had forgot that memorable one where our worthy secretary's traps were subjected to the intelligent scrutiny of Lady Ruthven's milk cows, who, while the photographers were having luncheon with her ladyship, proceeded to swallow the rather indigestible matter of which cameras, and tripod stands, and double dark slides, and focussing cloths, and other impedimenta belonging to the out-door section of the E. P. S. was composed.

In like manner I have set myself to swallow and, if possible, digest the rather indigestible contents of these papers; and, accordingly, having made the preliminary

number of wry faces, I begin, but always premising that the last four months' journals are to me a sealed book, and that I intend to look back for a month only, and that the notes will be at least as fresh, if not fresher, to me than they are to you.

First in order we may note the proposed exhibition of the Bengal Photographic Society, which seems one of those showing a large amount of healthy vitality. I might suggest an amendment of the seventh rule: "Exhibitors must make their own arrangements for the removal of their photographs the day after the closing of the exhibition." Now, I apprehend that few British photographers have East India agents, and the removal, or packing and returning, of the pictures should have been undertaken (for a fee, of course) by the society for all foreign exhibitors.

The letters from correspondents often contain about the most interesting matter in the journals, and much good frequently results from them. In the *News*, Sept. 11th, Mr. Houlson asks how to mount photographs on thin boards so that they may not cockle after mounting, and as I do not see that he has been answered, I will try to help him and others who may be in the same predicament. The way to do it is this:—Take a sheet of stout printing or cartridge paper, damp it thoroughly all over, then take as many photographs (untrimmed) as will cover it, damp them also, then paste them down, with starch paste, on the cartridge paper while both are quite damp, pressing out all air bubbles, and removing any little knobs of starch, &c. Then glue all the edges of the sheet of cartridge paper, keeping clear of the photographs. Attach this to a drawing or straining board, and stretch the paper with the prints as neat, tight, and flat as possible, and put it aside to dry. When dry, cut the paper off the board, and trim the prints; they will then be quite flat, and need no pressing. Neatly attach them to the thin boards, stout paper, or scrap book, by gluing about one-eighth of an inch all round and attaching the two together. This will give a beautifully flat mounting, with no cockling. On no account are prints, after being treated as described, to be pasted all over the back, as that would simply undo what has been done. I trust this will prove a bit of wholesome advice to more than Mr. Houlson.

The oasis in the desert is not more pleasant to the weary traveller than the letter of my friend, Mr. Joseph Collier, from the slopes of the Sierra Nevada, part of which appears in this month's *British Journal*, was to me—coming, as it did, in the midst of a weary wading through the *Journal* in search of something to fill this paper. With what zest and gusto the great pawky Scotchman goes into his romantic expedition, and improvises the necessary means to get over difficulties. All of you should study this delightful letter. Whatever may be the pecuniary results of the adventure, it will at least make Mr. Collier's burden no heavier to know that I and all the rest of his Edinburgh friends wish him God-speed and the best of luck in the new home he has chosen.

The chapters in the *British Journal* on the saving of waste should be carefully studied by professional photographers, containing, as they do, the long-acquired experience of Mr. Foxlee, than whom there are few more competent to teach. On one point only do I join issue with him: it is as to the saving and throwing down of hypo wastes. The plan which I have had in operation for years is, I think, a better one than that proposed by him, and is very simple in working. A wooden tank, lined like a cistern with pretty thick zinc, such as is used for baths, is provided, and is placed outside the developing room. The developing sink, which is a large wooden one, has three exits: one for the waste water, communicating with the drains; one for hypo, communicating with the zinc-lined cistern (which last, I may mention, has a tap for running off the exhausted hypo above two-thirds of its height); the third exit leads to another wooden tank, which is provided for the reepp-

\* Read before the Edinburgh Photographic Society.



tion of the wastes from developing plates, washing prints, dishes, &c., which are all run into the same receptacle, which is under the developing sink. A couple of common vulcanized balls are used as stoppers for either of the two exit pipes which are not in use. A supply of salt is added from time to time, and the surplus water run off as it accumulates.

When sufficient of the chloride and other wastes have been thrown down, it is collected, and fused along with the deposit recovered from the hypo tank, which last is now and again agitated, and the sides of tank scrubbed to keep the exposed surface of the zinc in good working condition.

I have found this to be a very efficient and easy plan to recover the hypo wastes, involving no trouble, and never getting out of order. The present arrangement has worked for ten years without repair, which I think is proof positive of its lasting qualities, as well as of its efficiency.

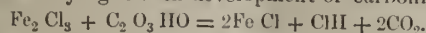
Among the foreign notes in the *British Journal* for September 18 is one from Dr. Vogel on intensifying with permanganate of potash, with which he seems to be charmed.\* Being, as I presume it is, his first experience with it, I have no doubt he believed he had discovered a good thing. But appearances are deceptive. The learned doctor will find, as I have, and as Mr. Jabez Hughes did, and published his experiences thereon years ago, that it is one of the least permanent of all the methods of intensifying. If the learned doctor can discover an intensifier as easily applied, as effective for the time being, and permanent, he will confer no small boon on photographers; but this is not one.

Very pleasant is the irony of Scott in the *British Journal*, who dates from the unpronounceable "Pass of Queghanhulich;" and we wait with impatience for a treatise on the qualities, styles, and prices of the clothes which "clothe the spirits." I trust he will add a word or two on their wearing qualities, and ascertain, if he can, whether we are to meet our lost ones in the spirit land as the wrinkled and toothless grannies and grandfathers who sometimes die here, or rather, as we love to think of them, in the heyday of their youth, and strength, and beauty. Do, good Scotticus, be speedy with your report, for we are all waiting for the next advent of so excellent a reporter.

I may here conclude this month's hasty notes by signifying that I have tried to avoid subjects likely to be taken up by the monthly summary of the NEWS, the gossip monthly notes of the Peripatetic, as well as the occasional notes from the North of our esteemed hon. secretary, Dr. Nicol; and rather choosing points which might be overlooked, or such as are of practical utility, or where a bit of practical advice may be of use; and I trust that whoever takes it up next may adopt their own, and not my way, and thus we shall have new, original, or at least varied, ways of seeing things brought before us every month.

#### ON MEASURING THE INTENSITY OF LIGHT.

In the *Annalen der Chemie*, M. Marchand gives an account of some experiments undertaken to estimate the intensity of chemical rays. When oxalate of iron in solution is exposed to light, carbonic acid is developed, and from the amount of gas set free some opinion may be formed of the chemical intensity of the light that has acted upon the compound. Unfortunately, the iron remaining behind adheres to the sides of the glass in an insoluble form, and thereby prevents the further penetration of the rays. For this reason M. Marchand makes use of a solution of chloride of iron, and a solution of oxalic acid, which are likewise decomposed by light with development of carbonic acid.



One equivalent of oxalic acid and one of chloride of

iron are employed for the purpose. To produce a sensitive liquid, fifty grammes of chemically pure oxalic acid are taken and dissolved in water saturated with carbonic acid, and diluted to the extent of a litre. The chloride of iron must be quite pure. It is produced by conducting chlorine gas through subchloride of iron (produced by dissolving iron in hydrochloric acid) until no more is absorbed, and the superfluous chlorine is thrown off by means of a current of air, but without boiling. The fluid is then diluted to the specific gravity 1.2, and then carbonic acid is introduced until the fluid is saturated therewith. These liquids are kept ready for use.

For conducting the experiment, ten cubic centimetres of chloride of iron are mixed with twenty cubic centimetres of oxalic acid solution, and these are put into a flask filled with carbonic acid water. The flask is in connection with a graduated tube, in which the gas is developed on exposure of the mixture to light, the carbonic acid being collected and measured over glycerine.

The saturation of the different fluids with carbonic acid is necessary, as otherwise they would retain any gas developed by the action of light. Of course, by an elevation of temperature, or diminution in the air pressure, some of the carbonic acid is lost. But this does not in any way impair the accuracy of the apparatus, according to M. Marchand, although Dr. Vogel, of Berlin, has his doubts on the matter.

The amount of solution gives off in the daylight about 260 cubic centimetres of gas, and then the reaction ceases, although, according to theory, as much as 340 cubic centimetres are contained in the liquid. For this reason fresh solution is made use of as soon as 260 cub. cents. of gas have been set free.

An apparatus of this kind has been in action ever since 1869. M. Marchand has tested it with the spectrum, and found that the strongest action is between F and G, stronger even than close to G; different, therefore, as Dr. Vogel points out, to the behaviour of photographic films.

M. Marchand has calculated the average amount of carbonic acid set free daily in his instrument, and he sets down the quantities during the different months as follows:—

January ...	1.84 cubic centimetres
February ...	3.93 "
March ...	6.441 "
April ...	14.095 "
May ...	19.459 "
June ...	21.043 "
July ...	21.410 "
August ...	18.917 "
September ...	13.649 "
October ...	6.858 "
November ...	2.885 "
December ...	1.795 "

Thus the chemical intensity of a June day is nearly twelve times that of an average day in December, and photographers cannot expect, therefore, to do more than a twelfth of the work as regards printing, &c. It is to be hoped that some simplification of Marchand's apparatus may be devised for practical purposes.

**BLISTERS.**—Blisters, O blisters! how can you bother me so? What a nuisance! Prints all mottled, and disgusting to look at. What shall we do? All sorts of prescriptions have been tried, and when one is found effective the tone is spoiled, and disaster is the consequence. There is a 'cat in the meal-bag' somewhere, and we must get her out. This much for the wrinkle; now for the dodge. After the prints have been toned and well washed, immerse them in a strong solution of alum, where they should remain about two minutes. Then remove them to fresh water, and wash out all traces of the alum, after which they are ready for the fixing bath. Moral:—Carry the prints back to clean water, after having passed them through any solution used in toning, before passing them into another solution.—I. B. WEBSTER in *Philadelphia Photographer*.

\* The first publication of the use of permanganate of potash as an intensifier was made in the NEWS some years ago, and consisted in the detail of some experiments of our own. We have not found any lack of permanency in such negatives.—ED. PHOTO. NEWS.



# The Photographic News.

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## THE PHOTOGRAPHIC EXHIBITION.

THE exhibition of the Photographic Society opened with a conversazione in the rooms of the Society of British Artists, Suffolk Street, Pall Mall, on the evening of Tuesday, the 13th instant. A tolerably large assemblage of visitors examined the pictures with much interest and satisfaction; but the attendance was scarcely so numerous as on former occasions. Very considerably varying opinions were expressed as to the relative excellence of the exhibition, the preponderating impression—probably nearest the truth—being to the effect that, with much individual excellence, the general quality of the display was inferior to that of last year. The number of contributions this year is somewhat smaller than last year, and the number of contributors is considerably smaller than last year, ninety-one persons having sent in specimens this year, as against one hundred and twenty-nine last year. We find some new contributors, and welcome back some who have not contributed for many years; but we have, on the other hand, to regret that several whose works have been distinguished ornaments on former occasions are conspicuous by their absence now. Captain Abney is entirely unrepresented. Mr. Robinson, who has not omitted to contribute for fifteen years past, with the exception of the pictures sent to the Crawshay competition, is unrepresented. Mr. Earl, whose noble landscapes have always been so welcome, is unrepresented. We miss with regret examples of the work of Manners Gordon, Henry Cooper, Frank Good, William Mayland, Marshall Wane, T. M. Brownrigg, Fritz Luckhardt, C. Reutlinger, C. Bergamasco, J. Albert, M. Denier, Professor Koller, and others whose exceptionally fine work added so much to the interest of the last exhibition.

On the other hand, there is much room for congratulation as to the excellence of much of the work in the present exhibition, and the progress illustrated in various directions. The magnificent specimens sent in by Messrs. Spencer, Sawyer, and Bird, illustrating progress in three distinct directions, would alone form an admirable display. These pictures, the majority of them of enormously large size, illustrate the especial phases of progress in photography during late years: they are examples of one of the most perfect modes of enlargement yet brought under the attention of photographers; they are examples of carbon printing of a degree of excellence which seems to leave nothing to desire; and they include examples of photo-mechanical printing unusually fine in every way. In

photo-mechanical printing, the Woodbury Printing Company send work which cannot be excelled, the texture and whole quality of the prints being of a character which requires very close examination to distinguish between them and ordinary albumenized silver prints. In the hasty examination possible during a conversazione (no private view having been available this year) it is difficult to make precise or detailed observation of the various contributions, and we can here only give first impressions of a few of the most prominent pictures. In portraiture, Mr. Valentine Blanchard remains *facile princeps*, and he has, we think, in some qualities exceeded his former work. His portrait of Barry Sullivan, the eminent tragedian, is a singularly noble piece of work, both as picture and portrait, as are also the portrait of Mr. Manville Fenn and that of Mr. Dillon Croker. Some portrait studies in character, and two Oriental interiors with portraits, are also very admirable. Mr. Abel Lewis, of Douglas, exhibits some very charming examples of portraits, delicate, chaste, and artistic. Mr. J. M. Young, of Llandudno, has some exceedingly capital work. One, entitled "The Bonquet," a portrait of a lady, is not exceeded by anything in the room; the treatment of the drapery and background, modifying the light and shade in printing, are managed with rare artistic taste. A portrait of a little boy, by Herr Hugo Theile, of Dresden, is very fine, and if a little of the interior had been sacrificed, would have been perfect. It has now, unfortunately, somewhat the appearance of a view of an interior with a little boy in the centre. The one portrait\* contributed by Mr. Slingsby is as perfect a direct life-size head as we have seen: massive, yet delicate, and perfectly modelled. Mr. Crawshay has some very capital work, both life-size and smaller. Mr. Rejlander sends two or three noble portraits. Amongst the portraiture which was deserving of special attention we may mention the work of Mr. Boucher, L. Bertin, and M. Lombardi, all of Brighton. Mr. W. Gillard, Mr. A. W. Wilson, Messrs. Barry and Co., J. E. Mayall, Vandyke and Brown, G. Hooper, Mrs. Cameron, R. F. Barnes, also send very fine examples of portraiture.

There are not many *genre* photographs or pictures which should be classed rather as artistic studies than portraits; but assuredly the fine frame of examples of child portraiture exhibited by Mr. Faulkner is full of artistic gems, and will repay long study. It may add to the interest in the eyes of many readers if we point out that the wonderful delicacy and richness of the prints, as prints, is due to the use of the collodio-chloride process in printing. The same remark may be made of the subject pictures by Mr. Bruce, of Dunse, which are singularly fine in every way. Mr. A. Ford Smith has one or two good bits of *genre*. Mr. Werge has a number of very admirable studies of children, draped and undraped, many of which are exceedingly fine. Mr. H. G. Cocking has some good subjects, well treated. Mrs. Cameron sends some of her characteristic pictures, many of them with much undeniable artistic quality, but also lacking much which, without derogating from their artistic quality, they might have possessed, of photographic excellence. The Misses Davison rarely fail to send some portrait studies with fine artistic feeling, nor have they on this occasion. Messrs. Jabez and Alfred Hughes send a variety of fine subjects, especially notable as perfect examples of collodion transfer work, as well as fine pictures.

To the landscape work we can barely make reference now beyond remarking that there are many very fine examples, the names of Bedford, Col. Wortley, Beasley, Boal, Col. Roche, Hudson, Col. Dixon, and other well-known photographers, affording guarantee that in this department the exhibition will contain worthy work.

\* We refer to the contributions to the Crawshay Competition in a separate column.—F.D.



## THE CRAWSHAY COMPETITION.

The pictures competing for the prizes so liberally offered by Mr. Crawshay, of Cyfarthfa Castle, are hung in two separate rooms, forming part of the exhibition of the Photographic Society now open in the Suffolk Street Gallery, the figure subjects in one room and the landscapes in another. In the former department the competition was not larger than last year, but in the landscape department the contributions were numerous. The prizes were awarded as follows.

The first prize, for the three best life-size heads, £50, Messrs. Chaffin and Sous, of Yeovil.

For the second best three of the same size, £25, Mr. Crawshay's three contributions received the award; but an intimation having been received to the effect that in case of any award being made to the pictures contributed by Mr. Crawshay himself, he desired the prize to be passed on to the next in excellence, it was awarded to Messrs. Robinson and Cherrill.

For the three best heads on 15 by 12 plates, 4½ inch faces, £25, Messrs. Robinson and Cherrill.

For the three second best of the same size, Mr. R. Slingsby, of Lincoln.

For the best enlargement on a plate 20 by 16, C. Ferranti.

It is noteworthy that amongst the competing pictures for the prizes for large heads were several which were altogether untouched. Those of Messrs. Robinson and Cherrill, which received the second prize, were of this character, as were those contributed by Mr. Neilson, of Edinburgh, most noble work, and much commended by the judges. The competition for the enlargements was very close, as all the contributions were excellent. The enlargements of Mr. Edwards were exceedingly fine. Some collodion prints on opal glass, by Vandyke and Brown, were much admired. A collodion transfer, by Mr. J. E. Palmer, was very fine. A head by Mr. Gillard, which arrived too late for competition, had many fine qualities, although too much out of focus in parts. Some enlargements by the Woodbury Printing Company had fine qualities, being very delicate, but a little grey and somewhat flat.

In the landscape competition, the first prize was the three best landscapes of any size not less than 10 by 8, £25, Messrs. Robinson and Cherrill.

For the second best three of the same size, £12, Mr. W. D. Sanderson.

For the best landscape of any size, £10, Messrs. Robinson and Cherrill.

For the second best landscape of any size, £5, Mr. W. D. Sanderson.

A number of the competing landscapes were especially approved by the judges, amongst which we may mention those of Messrs. A. and J. Bool as having more than once entered into the voting.

The judges were the same gentlemen as officiated last year: Dr. Diamond, Messrs. J. Glaisher, Leslie, G. Wharton Simpson, W. Mayland, and H. Baden Pritchard.

## VIENNA PHOTOGRAPHIC EXHIBITION.

We have to announce that an exhibition of photographs will be held in Vienna next year, under the auspices of the Vienna Photographic Society, of which the well-known portraitist, Herr Fritz Luckhardt, is secretary. There is some talk of Herr Luckhardt paying a visit to this country during the present year, to assure himself personally of the status of the art in Great Britain; and in the event of his doing so we shall be able to obtain from him personally more definite information on the subject than has hitherto been promulgated. It will be seen, however, from the notice we append—which is all the information that has yet been made public—that it is intended to keep the exhibition

open for a couple of months only, although the term may subsequently be extended, if such a course is found to be desirable. There is no mention of any medals or awards being made to exhibitors, but we believe the Voigtlander medals—of which eight or ten have been offered for various productions and processes—will be adjudged on the occasion. The following is the official announcement made by the Vienna Society in their organ, the *Photographische Correspondenz*:—

"It gives us particular pleasure to be able to inform our readers that the Photographic Society of Vienna is enabled, through the liberality of the direction of the Imperial Museum for Arts and Industry, to establish an International Exhibition of Photographs in the above named museum. The same will be opened in the middle of April, 1875, and last at least until the end of May. Further particulars will be shortly published. In the meantime, letters and enquiries should be addressed to the Council of the Vienna Photographic Society, III. Hauptstrasse 9, Vienna."

## FRENCH CORRESPONDENCE.

DU COS DU HAURON'S HELIOCHROMIC PROCESS: MODIFICATIONS—METHOD OF TRANSFERRING AND MOUNTING THE MONOCHROME PRINTS—THE STORY OF THE BURNING OF THE PARIS DIORAMA, AND NARROW ESCAPE OF DA GUERRE'S INVENTION.

SOME months ago I gave an account of the modifications recently made by M. Ducos du Hauron to his method of obtaining photographs in colours by the aid of three monochrome clichés. It will be remembered, no doubt, that, profiting by the experiments recently made known by Dr. Vogel, of Berlin, M. Ducos has lately employed, with advantage, coralline in his collodion, and in his last communication he tells us that in this way, and by using a second silver bath, he is enabled to work with much greater rapidity. This second bath is but a one or two per cent. solution of nitrate of silver, and the author thus explains the nature of the acceleration produced.

In proceeding to obtain his negatives on his original plan, the production of the clichés, he found, often necessitated a pose of a lengthy duration, and the film lost a good deal of its moisture; the nitrate of silver, thus becoming too much concentrated, dissolved a portion of the iodide, and diminished the sensitiveness of the film. By his new method of operating the nitrate of silver is concentrated to the proper degree only on evaporation. Thanks to this change, the exposure in the camera with a red glass has been reduced from thirty to six minutes in the sun, and under some circumstances an image may be produced in less than five minutes, and this, too, with lenses of by no means a rapid nature.

The heliochromic prints, or positives, are composed of images produced from the three clichés, under red, green, and violet screens; the impressions being taken upon coloured bichromated gelatine, and superposed by mounting. In printing, M. Ducos makes use of three pigmented papers, the first coloured with carmine, the second with a mixture of cadmium yellow and Indian yellow (chrome yellow being equally suitable), and the third paper with Prussian blue containing a slight addition of carmine.

After sensitizing, drying, and exposing to light, the pigmented paper is moistened and placed upon a glass plate, and developed by means of hot water. The monochromes thus obtained on glass plates are covered with a film of gelatine, and transferred to one and the same sheet of paper in the manner following. A gelatine bath is prepared by dissolving seven or eight grammes of gelatine in a litre of water. In this bath, which is too dilute to form a jelly when cold, the yellow monochrome is first of all immersed for some instants, and then a sheet of gelatinized paper is taken and plunged into the same bath, the gelatine side undermost. When the paper has been sufficiently saturated—that is to say, after a minute or two—the



monochrome image is withdrawn from the bath, together with the paper, and the two superposed and drained without employing a squeegee or other instrument. The adhesion of the two surfaces soon becomes perfect, and any creases that may exist disappear of themselves afterwards.

When this desiccation is complete, the plate, covered with the yellow monochrome and gelatine paper, is again immersed in the bath; it remains for an hour, or longer even, according to the thickness of the paper; after this period the monochrome is withdrawn together with the plate, and they are separated in the same way as a carbon print.

To superpose this yellow monochrome upon the blue one, the latter is plunged into the same gelatine bath for about an hour and a quarter. The yellow monochrome, after being detached from the glass, is immersed again; the two monochromes are then withdrawn from the liquid one upon the other in the manner previously described. So that the outlines may coincide exactly, the blue is slipped over the yellow, while the print is examined as a transparency. To follow the operation in this way is very easy, because the thickness of the glass is interposed between the eye and the double image. The two monochromes are then allowed to dry spontaneously.

The third and last monochrome image is applied in the same way, the two monochromes already upon paper being cemented to the monochrome still upon glass. When completed, the heliographic image is placed in cold water to separate the glass plate; the print is then dried, after being stretched upon a frame, and is then trimmed and mounted upon cardboard.

To facilitate the separation of the monochromes from the glass, M. Ducos du Hauron recommends the introduction into the colourless gelatine of a very minute quantity of bichromate, about half per cent. compared to the gelatine dissolved, and further advises the exposure to full daylight of the films cemented together.

This imperceptible quantity of bichromate suffices to modify the nature of the gelatine pellicle, so as to give it an adhesive property, without which the clear portions of the image (by reason of their thinness) are prone to hold to the glass. Before immersing the monochromes in the gelatine bath, they should be first bathed in cold water, which removes from them the light brown tint which the light has imparted to the film.

It is easily understood that the polychrome image being constituted by three images superposed, each of them ought to be much less intense than a single print would be. The monochrome must, therefore, be weak in the half tones, and a concentrated bichromate bath, together with a short exposure to light and thorough washing in warm water, will give such a result.

Instead of pigmented tissue, use may be made of plates properly prepared with pigment, only in this case the printing must take place through the glass. The prints thus obtained do not lack delicacy if care be taken to use sunlight, and to place the printing frames at the bottom of a tube the interior of which is painted black, to prevent the action of lateral rays.

M. Ducos du Hauron, who is just now in Paris, and giving directions for the manufacture of apparatus and accessories which he has till now been in need of in the provincial town where he resides, has shown us several specimens of his process, which he proposes to present to the French Photographie Society at their first meeting. Among them is a reproduction from a portrait painted in the last century, and a landscape from nature, which are very remarkable. Although the prints are made up of thin monochromes only, all the colours composing them are very distinct, and the results are really most striking. At the same time, we ought to say that the specimens are of very small dimensions—about quarter-plate—and, so far as the printing is concerned, leave something to be

desired. It is on these points more especially that progress is desirable.

Chance has recently put into my hands a document which is of importance in reference to the history of photography. It is a note preserved by the officer of the fire brigade who directed the operations on the occasion of the fire at the Paris Diorama in 1838. It is well known that Daguerre was a distinguished artist, and painter of the Diorama. To show his peculiar genius, he constructed upon the Boulevard St. Martin, on the same spot where to-day may be seen the Prince Eugene Barracks, a vast building, next door to which he took up his abode. When the fire took place, it was generally believed that his laboratory was destroyed at the same time as his paintings, and that the discovery which was about to make him famous, and of which rumours had already got abroad, would be entirely lost, together with his apparatus, specimens, and manuscripts. The document to which we have referred gives some interesting details on the subject. The officer commanding the fire brigade stationed in the Boulevard St. Martin, having been informed that a fire had broken out at the Diorama, hastened at once to the scene, together with the detachment under his command. As soon as he arrived on the spot, Daguerre ran to him and besought him to let the Diorama burn, and to use all his efforts to prevent the flames from spreading to the fifth floor of the house adjoining.

It was an old house of sorry appearance, of which a great many existed at that time in the neighbourhood of the Faubourg du Temple, and the flames were already reaching the first floor. All the inhabitants had already left, and the place was quite deserted and abandoned, and nobody seemed to think it worthy of attention. But the agitation of Daguerre, and the vehemence with which he insisted upon his request, left no doubt of the gravity of the matter, especially as he was too much interested in the affair to give false information. The officer therefore carried out his desires, and, without abandoning the principal seat of the fire, directed the jets from two pumps to be played upon the house in question, and the effect of these was such as to preserve the building, so that after a little while the officer and two of his men were enabled to penetrate upstairs to the fifth floor. The stairs were so narrow and steep, and the air so stifling, that it was impossible for Daguerre to follow them, and, arrived at the top, they broke open with a blow from their hatchets the door which had been pointed out to them. This miserable little chamber was Daguerre's atelier. They found the optical instruments, drawings, manuscripts, &c., as also the apparatus, intact. All the objects were rapidly placed in boxes with care, and when Daguerre found his way upstairs shortly afterwards, and penetrated to his laboratory, his joy in finding the precious fruits of his long researches unconsumed and uninjured knew no bounds.

It was in this way that the publication of the discovery was rendered possible the following year by Francois Arago, and that the public was placed in possession of an invention which had such important results.

ERNEST LACAN.

#### A RAPID DRY-PLATE PROCESS.

BY PROFESSOR H. J. NEWTON.\*

At a previous meeting I alluded to the fact that a collodion containing a chloride was better adapted for making dry plates than ordinary bromo-iodized collodion, especially if alkaline development was to be used. In continuing my experiments in that direction I found that plates prepared with a collodion containing a chloride were peculiar, inasmuch that a plain pyrogallie acid solution would develop a picture with about the same exposure as that of a wet plate. The image was always very thin and delicate, but full of detail, and readily responded to the action of

\* Read before the Photographic Section of the American Institute.



acid pyro and silver, so that no great difficulty was experienced in obtaining negatives of sufficient density. I found, however, that a slight trace of alkali, with a trace also of bromide of potassium, facilitated the development. It brought up a much stronger negative at first, and much less labour was required to obtain the proper density.

I had at the same time compounded a new preservative, the result of experiments carried on at the same time, and which has much to do with the extreme sensitiveness of the plates. I therefore propose to give in detail the whole process, with the formula for the collodion which I have found to be the best.

First the collodion formula. I use

Alcohol and ether in equal parts.

Bromide of cadmium ...	...	1½	grs to the oz.
Chloride of calcium ...	...	1	" "
Iodide of cadmium ...	...	4½	" "

Dissolve the salts in the alcohol in the order given; when dissolved, add the cotton. A short-fibre cotton should be procured if possible. Five grains to the ounce will ordinarily be found to answer. If the cotton is perfectly free from acid, collodion so prepared will keep for a year or two without any change for the worse. Before using, it should be rendered an orange colour with a scale of iodine. I have made beautiful negatives with it when only a few hours old.

I would state here that I have compounded a collodion for out-door wet plates with the same salts in different proportions, using half a grain of the bromide, the same quantity of chloride, and five and a-half grains of iodine, which I designate my No. 2. The mixing of the No. 1 and No. 2 in equal quantities forms what I call my No. 3. In my experiments with some forty differently salted collodions, I do not hesitate to say that these are decidedly the most sensitive. I am sustained in my conclusions by some of our most experienced photographers, both in and out-door workers. The No. 2 is, however, preferred for out-door work to No. 1 or No. 3, unless the picture to be taken is mostly in shadow, when No. 1 or No. 3 would be more suitable.

In making dry plates, a bath should be used which gives good brilliant negatives when wet. The plates should remain in the bath about five minutes; when taken out they should be plunged into an upright bath of distilled water. If they are laid into a horizontal dish, the iodide of silver formed by the small portion of negative bath adhering to the surface of the plate, coming in contact with the water, will precipitate into the surface of the collodion film, and result in producing innumerable pin-holes when the plate is developed. There cannot be too much stress laid upon the importance of using *pure water* for the first washings. This has been reiterated by every successful dry plate worker who has written on the subject, and yet I frequently find photographers expressing disgust at the result of their efforts with dry plates, when failure has been due entirely to a disregard of this important injunction. When reliable distilled water cannot be procured, water obtained by melting ice will answer. Besides the upright bath, I use two horizontal dishes of distilled water. By so doing I keep four plates in the work, and finish one every five minutes, or the time it takes a plate in the negative bath, thereby losing no time. A plate is taken from the negative bath and placed in the upright water bath, another plate flowed with collodion, and placed in the negative bath. The plate in the upright water bath is then removed to one of the horizontal dishes. This is continued until both horizontal dishes contain plates, when there will be four plates in the work. I then take the first plate from the last horizontal dish and give it a slight washing under the tap, and then place it in a dish containing a four-grain solution of chloride of ammonium, where it remains until I remove a plate from the negative bath and coat another. The plate is then taken

from the salt solution, washed under the tap, and placed in a dish containing the preservative, where it is allowed to remain one or two minutes—the time is not material—it is then taken out, and the back wiped with a sponge and set up to dry.

I have found that the drying is much facilitated by wiping the back. I have observed that the collodion side of a negative never dries while the back is wet. This fact would be used to great advantage by those requiring long exposures with wet plates. By placing a wet piece of blotting-paper over the back of the sensitized plate the drying of the collodion film could be prevented for a long time. It is important that the drying of the plates should not be retarded, and the sooner the drying is effected under ordinary circumstances the better. The solution of chloride of ammonium can be used several times.

My preservative solution is made as follows:—

Water ...	...	...	10 ounces
Tannin ...	...	...	50 grains
Laudanum ...	...	...	1 drachm

The addition of laudanum to the tannin solution produces a precipitate of the gum in the tannin. I thought, at first, it was the opium contained in the laudanum; I found it, however, wholly insoluble in alcohol. I therefore concluded it came from the tannin solution. This precipitation should be filtered out, and then fifty grains of pulverized gum-arabic added. If the gum is added before the laudanum there will be no precipitate formed, and the resulting compound will not answer the same purpose.

After the solution has been again filtered it is ready for use. I have made good negatives with plates prepared by the foregoing process in five to ten seconds' exposure, which was quite as quick as a wet plate negative could be made under the same conditions.

To develop, I use two wide-mouth vials, holding about two ounces each. Into one I put one drop of a solution of aqua ammonia, half water, and one drop of a ten-grain solution of bromide of potassium; into the other about three-fourths of an ounce of a three-grain solution of pyrogallic acid. I first wash the plate thoroughly, and flow over it the plain pyro solution several times, and then pour it into the bottle containing the ammonia and bromide of potassium, and then flow again over the plate. The image comes up instantly, full of detail, if the exposure has been rightly timed. When this development has proceeded far enough, it is washed off, and the plate flowed with a weak solution of citric or acetic acid to neutralize the ammonia. The image can then be brought to the proper strength, either by the ordinary acid pyro solution, or with pyrogallic acid and tannin. I use the latter, as it is the most convenient. It keeps for a long time, and is the most energetic. I mix it, six grains each, to the ounce of pyro and tannin; usually using half that strength. It is, however, very convenient to have it the full strength, as it is a powerful developer and gives fine negatives with these plates without the alkali, giving about twice the exposure. I fix the negatives in a strong hypo solution, made a little acid with acetic acid. The addition of a small quantity of gold and silver to the hypo will prevent the reduction of the negative in fixing.

There has been some objection to gum-arabic in the preservative, on account of a tendency which the negatives have to blister when being developed where it is used. I have experienced, however, no trouble of this kind, which may be due to the exceeding small quantity of alkali employed. If, however, any should object to using the gum, they will find an excellent substitute in sugar of milk ten grains and grape-sugar five grains to the ounce of preservative. I always use albumen (sixteen ounces of water to the albumen from one egg) for a substratum for my plates, and have experienced no trouble from blisters with either the gum or sugar of milk.



## Correspondence.

## IMPROVING NEGATIVES.

DEAR SIR,—As there is so much done at the present time in negative retouching, perhaps you would like to try the following plan, which, if you approve, may be recommended to your numerous readers:—

Take a good B or BB pencil, and with a sharp penknife scrape off some of the lead free from grit, and by means of a small stump (say No. 1 or 2, which may be had of any dealer in artist's materials), apply a little of it to any part of the negative which requires intensifying, and gently rub it on. If the negative is an old one, and the varnish quite hard and dry, breathe on it before applying the lead. Faulty places in backgrounds may be much improved, and it is especially useful in giving delicacy to the face when the negative is not sufficiently dense.

It is possible others have already tried this method, but I am not aware of it.—I am, dear sir, yours truly,  
*Nulsea, nr. Bristol, 7th October.* JOHN D. WATMOUTH.

## IMAGE BEFORE DEVELOPING.

SIR,—In reading last week's News I find an account of an undeveloped dry plate showing a visible image by reflected light, and being described as an unusual case I am led to trouble you with my experience in that line.

In the early part of August last, knowing I was going to the seaside for a week or two, I thought of taking the camera with me, and having last year got into trouble with the wet process (or, rather, with the materials), I thought of trying the dry this time, and did so with no better success.

On August 11th I prepared about a dozen each of quarter and half plates by a process described by Mr. Davies in the *Photographic News* of June 12th, 1874, page 285. I carried out all the instructions to the best of my ability, the only uncertain thing being that I used Allsopp's bitter ale (strong sweet ale is described in the formula). After the plates had been prepared a few days, I tried one or two behind a negative in a printing frame without any kind of backing, and was quite surprised, on removing the plate after sixteen seconds' exposure, to find an impression quite distinct by reflected light. I then tried to develop it more than it was, but could make no job of it, the plate getting fogged all over after a minute or two.

I have exposed the plates several times since with the same results—in fact, this morning I cut a plate in three pieces, and exposed two of them each about two minutes, and they showed the visible image just the same as the others; but I cannot make a job of the developing. I have about two or three plates left, and shall save them till a future time.—Yours obediently,  
B. D.

*London, October 13th.*

[The presence of a visible image on dry plates coated with an organic preservative is by no means uncommon: it has, indeed, occasionally been seen with a wet plate. As a rule, it indicates over-exposure. In our correspondent's case of contact printing we think it indicates over-exposure, and the fogging on development is, doubtless, from the same cause.—Ed.]

## THE CRAWSHAY AWARDS.

DEAR SIR,—Is there not some error in the award of the Crawshay prize for enlargements?

In the published circular containing the final announcement of the conditions to be observed by intending competitors, it is expressly stated that "slight touching or spotting, such as is now customary to apply to negatives or prints that are not professedly retouched, is allowed, but worked-up prints will be disqualified. This having been so clearly and distinctly insisted upon, it is a matter of the greatest surprise to many photographers, as well as myself,

to find the prize awarded for professedly worked-up enlargements, such enlargements being advertised as exhibited in illustration of a patented method of finishing or working up ordinary photographs; the enlarged photographs themselves not being the work of the exhibitor, who only claims the method of finishing. I have no word to say in dispraise of Mr. Ferranti's process for finishing photographs, my only object being to call attention to the fact that the judges have entirely ignored the terms laid down by Mr. Crawshay, and accepted as binding by the competitors.

Under these circumstances I enter my protest against the award to Mr. Ferranti, the pictures shown by him being clearly disqualified, according to the plainly expressed terms of the invitation to competitors.—I am, dear sir, yours truly,  
*Hackney, October 14.* B. J. EDWARDS.

[Mr. Edwards is curiously in error. He mixes up, in an unjustifiable manner, an advertisement by Mr. Ferranti, in relation to a mode of finishing photographs, with Mr. Ferranti's pictures sent in to compete for the prize for enlargements. He then proceeds to affirm that the enlargements in question were not Mr. Ferranti's own work. This may be so, or not; but the judges have no more evidence of the matter than they have that the pictures sent in by any competitor were or were not his own work. Finally, he quotes as Mr. Crawshay's conditions certain conditions which Mr. Crawshay did not make. The passage quoted is from the advertisement of last year, referring to last year's pictures, and, by some inadvertence, copied in a circular sent out by the Photographic Society a few days before the exhibition. Not one of Mr. Crawshay's announcements in relation to the present competition (of which several have appeared during the year) make any statement as to retouched prints being disqualified.—Ed.]

## TECHNICAL EXHIBITION MEETING OF THE SOUTH LONDON PHOTOGRAPHIC SOCIETY.

DEAR SIR,—Will you kindly again permit me to announce that the Technical Exhibition Meeting of the South London Photographic Society will take place at the Cambridge Hall, Newman Street, Oxford Street, on Thursday evening, October 29th, at seven o'clock. This meeting is intended for the exhibition of apparatus and appliances, the reading of short papers, illustrated with specimens, and demonstration of experiments and processes, together with the exhibition of results of secret and patented processes. The following rules have been drawn up by the committee for the regulation of the business:—

All papers to be read must be received by the secretary at his residence on or before the morning of the 28th.

Exhibitors wishing to work processes or experiments must acquaint the secretary with the probable length of time required.

Questions may be asked, and information given, in relation to the matter before the meeting, but no discussion will be permitted.

Every article must have attached to it an explanatory label, or short description of its use.

All articles must be sent carriage paid (with instructions for return) to the place of meeting, not later than three o'clock on the 28th.

Any further explanation may be had by applying to the secretary.—Yours faithfully, EDWIN COCKING, Hon. Sec.

*57, Queen's Road, Peckham, S.E.*

## Proceedings of Societies.

## EDINBURGH PHOTOGRAPHIC SOCIETY.

The twelfth ordinary meeting of this society was held at 5, St. Andrew Square, on the evening of Wednesday, the 7th inst., Mr. R. G. Muir, president, in the chair.

The minutes of the previous and out-door meetings were read and approved, and Messrs. Alexander Asher, John Thompson, and



Alexander Henderson (of Montreal) were admitted ordinary members.

Mr. TURNBULL read a paper, entitled "A Few Words on the Beer and Albumen Process" (see page 495.)

Mr. MATHIESON had wrought the process almost exclusively, and succeeded better with it than with any other. He had tried the addition of silver, as now recommended by Mr. Davies, but he really could not find any difference between plates prepared with it, and those prepared in the older way. He called the attention of the meeting to what he considered a curious fact—*i.e.*, that at the time the process was introduced by Mr. Davies, he got pictures with exposures of two and three minutes; but that gradually the necessary exposure had been increased, until at the present time at least three times as long was required. He wondered whether the beer made now differed from that of six or eight years ago.

Mr. YERBURY had not much experience in dry plate work, but what he had done was with Davies' process. He had tried both with and without the addition of silver, and was quite certain that the former was the best. The plates were not only more rapid, but the resulting negatives were of better quality.

Dr. THOMPSON had not done much in dry plates this season, but what he had, had been by Davies' method, and he had found it in every way satisfactory. He had worked exactly according to the directions given by Mr. Davies, except that he had somewhat raised the temperature of the plate during development. His plan was to dip the plate in a tray of equal parts of alcohol and water, and, after washing, to place it in a dish of water, heated to about 45° C. It was then transferred to a solution of plain pyrogallie acid, and the development proceeded as rapidly as in ordinary iron development.

Dr. NICOL thought Mr. Turnbull was mistaken in supposing that the addition of ammonia to albumen resulted in a mere mechanical mixture. There was in reality a very complicated reaction, which, amongst other results, gave a limpidity to the albumen, by the partial breaking up of the cellulose of which it was partly composed. He had experimented more or less with nearly every dry process that had been introduced, and had produced fairly good negatives with them all; but when he wanted pictures, rather than experiments, he had for years trusted to Davies' in preference to all others. He could easily understand how Mr. Turnbull might make a series of comparative experiments, and come to the conclusion that the addition of silver gave no additional sensitiveness. It should, however, be remembered that very much, in all processes, lay in the development, and that it was not at all unlikely that two modifications, developed in the same way, would give only similar results, while, by some alteration in the method of bringing out the image, one might be found very much more rapid than the other. In the case in point, he knew that the plates prepared with silver in the beer could, by very slight modification in the method of developing, bear a reduction of nearly a half in the time of exposure. He quite agreed with Mr. Matheson in thinking that the plates required a much longer exposure now than they did ten years ago, but he did not think it was caused by any alteration in the quality of the material used. He was rather inclined to attribute it to a generally higher cultivation of the knowledge of what really constituted a good negative, as he believed that many of the hard, patched negatives—the result of the short exposures of that period—would not now be thought worth varnishing.

Mr. DAVIES said that he had never said that the beer and albumen was a rapid process, and if it had been, he would have had nothing to do with it. He did not like rapid dry processes, as whenever we have great sensitiveness, we have, as a natural result, great uncertainty. He had no doubt that Mr. Turnbull's experiments were quite correct so far as he had gone, but he believed that nearly everything in connection with rapidity depended on the development, or on the addition to the film of something by which it would be promoted; and he thought that the silver which he added to the beer acted in that way. He had brought one or two negatives, however, to show what could be done in the direction of rapidity with beer and albumen, if rapidity was really wanted. He then handed round three pairs of negatives, one of each being by beer and albumen, and one by wet collodion. Each pair had been exposed simultaneously, the preservative of the first and second being made decidedly alkaline, and the third, after preparation, thoroughly fumed with ammonia. The first two had been exposed ten seconds, and were both under-exposed, but the dry plate contained considerably more detail than the wet. The second pair had received an exposure of eighteen seconds; both were fully out, but the dry plate was decidedly the better of

the two. The third pair, the dry one of which had been fumed, were exposed for only one and a-half seconds; the wet plate was considerably under-exposed, but the dry one showed full detail and quite sufficient printing density, the clouds especially being very fine. In reply to several questions, Mr. Davies said that he had not been able to make many experiments as yet with the fumed plates. He found, however, that after fuming, the plates required to stand for at least four hours before exposure. He promised to continue his experiments, and report the results at a future meeting.

Mr. DAVIES then read a paper, "The Spirit of the Journals" (see page 496), which created some amusement, and for which he received a vote of thanks. A donation of a number of very fine prints from Mr. Henderson, of Montreal, was presented to the album of the society; and Mr. Yerbury also contributed some fine specimens of his work at one of the outdoor meetings, one of them including a capital group of the members present.

On the motion of Mr. W. Neilson, votes of thanks were awarded to Mr. Turnbull for his paper, and to Messrs. Henderson and Yerbury for their donations, and the meeting shortly afterwards adjourned till the first Wednesday in November, when the annual general meeting will take place.

#### THE PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

The monthly meeting of the board of management was held at the offices, 174, Fleet Street, on Wednesday evening, October 7th, Mr. W. S. Bird in the chair. After the routine business had been disposed of, Mr. Pritchard, the treasurer, announced the receipt of five guineas from Mr. Bedford, who has signified his intention of becoming an annual subscriber of one guinea.

The SECRETARY announced the receipt of twelve 12 by 10 photographs from Mr. Warwick Brooks, of Manchester; twenty-five large and thirty-six cartes from Mr. Rejlander; and thirty-six assorted sizes from Mr. Stillman, as prizes in the Art Union Distribution, which a sub-committee were appointed to organise and carry out.

The secretary was, on the motion of Mr. Attwood, instructed to write to the council of the Photographic Society of Great Britain, to ask if they would grant one day during the forthcoming exhibition for the benefit of the funds of the association.

Mr. Bird having vacated the chair, he was elected chairman of the board of management, vice Mr. Croughton, who had resigned on account of leaving London for Lowestoft. Mr. Bird having resumed the chair, the secretary presented an application, duly signed by two members of the association, from a photographer for relief. The application stated that he had been in business for himself nine and a-half years, and was now in distress on account of an illness of eighteen months, the whole of which time he had been unable to do much work. He has a wife and eight children (the eldest thirteen) dependent upon him. All his apparatus had been pawned for food, and his landlord had distrained for rent. Although not a member of the association, the board were unanimously of opinion that it was a case worthy of consideration, and, after hearing further particulars from the two members who had signed the application, the sum of £5 was voted to him.

Fourteen new members were proposed for election, and on the secretary reporting that their references were satisfactory, they were duly admitted as members.

The secretary, who had been acting as treasurer pro tem., on handing over the banking accounts to Mr. Pritchard, the treasurer, submitted a balance sheet of affairs which showed that since the commencement of the movement the receipts had been £15 14s. 2d. The payments for advertising, stationery, rent, &c., £21 18s. 8d., leaving a balance in the London and County Bank of £22 19s. 6d., and in the hands of the secretary, 16s.

This concluded the business, and the board adjourned till the 4th of November.

W. T. WILKINSON, Secretary.

14, South Street, Bromley, Kent.

#### Talk in the Studio.

PHOTOGRAPHIC REGISTRATION OF OCEAN TEMPERATURE.—Dr. Neumayer has presented to the Geographical Society of Berlin a photographic apparatus for determining the temperature of the currents at the greatest depths of the ocean. There are many ingenious peculiarities about the apparatus, but it is essentially a thermometer fixed in a copper bottle, with a piece of photographic paper on one side of it, and charcoal points as the terminal poles of an electrical apparatus. At any desired



depth the connection is made with the battery, and the electric light produced marks the height of the mercury in the thermometer on the photographic paper.

**THE WEATHER IN ENAMELLING PRINTS.**—Mr. I. B. Wobster says, in the *Philadelphia Photographer*:—"To insure success great care should be taken in every branch of the process. I find that several different methods for preparing the plate (glass) for enamelling are published, and presume that all are equally good in the hands of those who use them. What I particularly wish to call attention to is the fact of such a great difference in securing a complete divorcement in all cases; you may for ten days produce perfect surfaces in every instance, and all at once you lose everything in consequence of the print adhering to the glass. Now the query comes up, why the difference? Watch the barometer, and act according to its rising or falling propensities. To insure a perfect clearing from the plate, the photograph must be perfectly dry before the mount is applied to it, and then both must be thoroughly dried before an attempt is made to separate them. Artificial heat is not altogether reliable unless applied as a general heater—for instance, similar to the heat of an oven, and that, too, very gradual. A violent heat will spoil all. A 'hint to the wise being sufficient,' I forbear to enlarge."

**SUBSTITUTE FOR AN ARGENTOMETER.**—A correspondent of the *English Mechanic* says:—"Obtain an Allsopp's Minim Meter, which is a glass instrument, like a syringe, graduated up to 60 minims (480 of which equal one ounce of distilled water at 60° Fah.). Make a stock solution of chloride of sodium 34½ grains to 1 ounce of distilled water. Then take up, by means of the minim meter, 100 minims of the bath to be tested, and convey it to a test tube; rinse the minim meter with pure water, take up 60 minims of the solution of chloride of sodium, and then eject it carefully into the 100 minims of bath. As the drops of chloride of sodium solution pass into the nitrate of silver solution a white flocculent precipitate of chloride of silver will be formed. Hold the test tube by the top, and shake it briskly sideways; this causes the precipitate to settle rapidly. Be careful not to add too much chloride of sodium at first, as the chloride of silver is soluble in an excess. When the liquid above the precipitate in the tube appears of a bluish-white or milky tinge, it is very near saturation, and the test solution should be added drop by drop until no precipitate or cloudiness appears. The process is then complete, the number of minims of test solution expended representing the strength of the bath in grains per ounce—that is, supposing 20 minims of test solution are left unused, then 40 minims have been expended, and the bath is, therefore, 40 grains to the ounce. Of course, if the bath is more than 60 grains, the 60 minims of test will be used, and more will be required from the stock. The above process is perfectly reliable; the minim meter is useful for other purposes. The argentometer costs twice as much, and is not reliable—except with a newly made bath, when it is not required, as the strength is known. The value of the nitrate of silver used will probably never exceed one penny for each test, and the chloride of silver produced can be put with the other residues, to be reduced at home or sent to the refiners, as convenient."

## To Correspondents.

**MARSHAL HENRY.**—Artists' lay figures are of various kinds and of every size, from about a foot high to life-size. They are also of different degrees of complexity and value. The best are perfectly articulated like a human figure, and may be made to assume almost any position of limb, body, or head, so that when duly draped they could scarcely be distinguished from a human figure. There is no attempt made, as a rule, to give a face of any special character, and for expression you must depend entirely on the living model. Lay figures can be obtained from all dealers in artists' materials, and the prices will vary from a few shillings to a few pounds.

**H. M. M.**—The ordinary method of making chloride of gold by means of nitro-hydrochloric acid may be applied to alloyed samples as well as to pure gold. If the alloy be silver, it will be thrown down as insoluble chloride in the process; if it be copper, it will remain in solution, and will do no harm. We have often given instructions in the *News* and in the *Year-Books* for making chloride of gold. If you cannot find a reference, write again, and we will help you.

**W. A. B.**—If you had carefully read the articles in question, you would have seen that in the third or fourth of them we explained that *sad soda* is the American colloquialism for common carbonate of soda.

**ENAMEL.**—Unless you are familiar with the operations in collodion making, you can buy what you require better and cheaper. If you can buy good pyroxyline, which should be made at a low temperature, and so give a horny collodion, you may succeed. Take methylated ether and methylated spirit in equal proportions, and dissolve pyroxyline therein. It is difficult to state definite proportions, as this will be much governed by the quality of the pyroxyline. About four or five grains to each ounce of mixed solvents will answer with some samples, whilst with others nearly double the proportion may be required.

**J. L.**—We are not aware of any method whereby you can secure a certain title, like that you mention, for sole application to your studio.

**COLLODIO-BROMIDE.**—You had better follow the details given by Mr. Cooper in our *Year-Book*. For the emulsion you may use the formula you mention. The uranium salt is added when the emulsion is mixed.

**BENEFICIO.**—The *News* will doubtless aid you best in securing the material you require; or the *Year-Book* will give you much of it in a condensed form. If you can obtain a copy of the *British Quarterly Review* for October, 1867, you will find almost everything in the form you require it. The article was printed in various articles of the *News* in the volume for 1867.

**THE CRAWSHAY COMPETITION.**—The "Little Man in Green" sends us a long and interesting letter setting forth his grievances as a disappointed man, misled by the circular issued by the Photographic Society. Our correspondent states that he followed this circular accurately, and then found that his pictures were disqualified by their size. He says:—"I suppose I am not the only photographer who has been misled over the No. 3 prize in the Crawshaw competition. I am quite aware that, seeing that the announcement in the circular of the 19th September was at variance with the advertisement in the *Year-Book*, I ought to have paused awhile. But I am one of those who do things impulsively, and as time was short there was no room or time to doubt but that the circular meant what it said. So I set to work and finished three 5½-inch heads, and was happy—supremely so; so happy, in fact, that I told my wife I should take my holiday at once, and run over to Paris and see how *nos intimes* were getting on. 'I have been and gone and done it,' as the boy said when he broke the lamp. I enjoyed myself awfully, did everything and everywhere, and was done by everybody everywhere. Still, if I had a sad moment, that very sadness was pleasant, for my thoughts would revert to my darling 5½-inch heads, and visions of Mr. Crawshaw's cheque for £25 possibly lured me on into expenditure just a little over what my home ruler advised me to indulge in. I have returned, and only to find my prospects blasted, and my fondest and most cherished hopes crushed. Misfits by one inch and a-quarter. Thanks to whom? But no; though Bonhastes Furioso was a fool to me when the *News* was brought me, I must try and get cool. It will be some time ere I am fit for civilized society, I feel sure—I am so very impulsive. I shall now return to my country home, as London has, for the moment, no charms for me; and I shall commit my pictures to the flames, and then, when this act of cremation has been accomplished, I shall return to town, and pull your house in Suffolk Street pell-mell about your ears in the interest of my 'brudder blacks' who may chance to be hung within those walls. Let the judges look to it. This year I meant exhibiting, as I see a chance of impartiality, which will be, in my estimation, a refreshing treat. Let Justice, for a change, be deaf instead of blind, and so not able to listen to the voice of the charmer, but to look at the general artistic effects, and the simplicity with which those effects are produced, and so encourage gentlemen in our profession to aim at something higher than the mere perfecting of the most mechanical branch of their studio work. I think the end should be held to justify the means, and then our exhibitions would contain gems indeed. Last year's exhibition of direct life-sized ghosts proved to me that if a man does not want to frighten his customers, he must not touch them; and experience teaches me that, though enlarging be done for the trade in ever so wholesale and complete a manner, only about once a year does a large head come to hand that will bear looking at ten feet off without working up. Now, Mr. Editor, I will conclude. I could say more, but shall wait till Suffolk Street opens, when, as an impartial observer, I may trouble you again." We sympathize much with the "little man," but he must admit that all Mr. Crawshaw's announcements have been precise enough, and that it was, to say the least, unwise to leave until the end of September the production of specimens which must be delivered in the beginning of October. Some other competitors have complained of being misled in other points by the circular in question. It is to be regretted. The errors have arisen, we have reason to believe, by the conditions of a former year having been, by some inadvertence, copied in the circular in question; but no one can be justified in ignoring or disregarding all the previous announcements, which were authoritative, clear, and precise.

**A PRINT CUTTER.**—We have received by post a revolving knife for cutting prints, without any letter of advice from any one. Several Correspondents in our next.



## The Photographic News, October 23, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### A PRACTICAL PHOTOTYPE PROCESS—PHOTOGRAPHY IN THE NAVY—DIFFUSION OF ORDERS BY PHOTOGRAPHY—PAINTING ON GLASS BY MEANS OF ALBUMEN.

*A Practical Phototype Process.*—We hear that a French phototype process is to be employed in London shortly to aid in the printing of an illustrated journal that will appear about December next. So far as we have learnt, the process does no more than many others we have heard of, but we suppose that it is simpler and more certain in its results, for the vast number of specimens we have seen were certainly of a most satisfactory kind. Although we are not familiar with the precise details of the method, which seems to be kept somewhat of a secret, we may state that by its means the expensive process of engraving on wood or other material is altogether avoided. Most people know that the cutting of a wood block generally costs as much as the sketching by the artist, so that if the latter charges five or six pounds for his labour, the engraving will come to as much more. Now the phototype process in question does the engraver's work, for as soon as the artist has completed his sketch everything else is a mere matter of detail; and instead of five or six pounds being expended in the production of the block, fifteen or twenty shillings is the utmost it will cost. The sketch—which is, of course, a linear one—drawn by a very black pencil on white paper, is simply photographed, transferred to stone, and re-transferred afterwards to zinc, from which the impressions are taken. The prints are not, of course, so sharply defined as if they were impressions from a finely-cut wood block, but they are, nevertheless, very perfect, and they render possible what before was an impossibility: in other words, a publisher of a newspaper can afford to give six or seven guineas for a block, while ten or twelve would be quite beyond his means, for in the latter case he could never hope for a profitable return. But photography, in taking the place of the wood engraver, does more than this: it removes the great grievance under which most artists suffer. They are always at the mercy of the graver, for let their outlines be ever so delicate, and their lines and shading of the most perfect kind, a clumsy or ill-educated engraver may ruin the whole work. The engraver is generally somewhat of an artist, too, but if his ideas do not coincide with those of the sketcher the efforts of the latter are more or less in vain. Although, therefore, the results may be somewhat inferior to woodcuts, this new process will find great favour among artists in black and white, who may be certain that their pictures will, when finished, never be manipulated by any other hands than their own. Should we become more familiar with the details of the process, we shall not fail to communicate them to our readers.

*Photography in the Navy.*—It seems that our sailors are to be taught photography in future, and arrangements have been made at the Royal Naval College at Greenwich for instruction to be given in the art. This is exceedingly gratifying intelligence, for the college has but recently started into existence, and the curriculum of studies to be pursued by the lieutenants and sub-lieutenants has not yet been completely fixed. There cannot be a doubt of the importance of our vessels, and especially those stationed abroad, having an officer on board acquainted with photography, and furnished with all the instruments and requisites for the purpose; and as to fitting up a dark room in the hold, there would be but little difficulty in the matter, for obscurity is plentiful everywhere at and below the water-line. It would be no easy task, probably, to secure pictures of coast scenery, but such pictures of prominences, rocks, beacons, &c., would be invaluable additions to a chart for purposes of verification. Our corps of Royal Engineers have a certain percentage of photographers among them, and it is certainly well that our

Navy, also, should know something of so useful an art. Our sailor prince, the Duke of Edinburgh, is well known to be an accomplished photographer.

*Diffusion of Orders by Photography.*—At the head of every regiment, marching in front of the band, may be seen a little body of stalwart men, with long beards, carrying axes, spades, saws, and other useful implements. These, as our readers know, are called pioneers, and it has recently been decided by the Horse Guards to modify the equipment of these men. Unfortunately, however, there are scarcely two of them dressed alike, and the complicated instructions that would have to be issued, therefore, as to how this one is to carry his axe, another his saw, and how the tools are to be adjusted in reference to the new valise equipment that our soldiers wear in place of the old knapsack, would be very lengthy, and possibly somewhat unintelligible. A series of ten photographs, cabinet size, one of each man, has, however, been executed, the models being pioneers carefully dressed in their new appointments arranged as if on parade. Most of us are aware of the scrupulous attention paid to the dress of a soldier, and have seen, when a guard turns out, the serjeant move slowly up and down the ranks to inspect them, arranging a buckle here and a strap there, ready for the arrival of the officer. Such a photograph of a pioneer dressed accurately for parade, with each tag and buckle in its place, and faultlessly accoutred in every particular, is all that commanding officers of regiments at foreign stations require to ensure the new appointments forwarded to them being worn in the fashion approved of at the Horse Guards, and any further instructions in the matter are quite unnecessary. This is a useful application of our art, well worthy noting.

*Painting on Glass by Means of Albumen.*—To enable you to paint upon glass there are few things so serviceable as albumen, or a solution thereof. By coating the reverse of a negative in this way, you at once permit of any pigment or other material being readily applied with a brush, supposing you wish to stop out or protect certain parts in printing. For colouring photographic transparencies for employment in the magic lantern, the use of albumen will be found very handy; and if the pigments are inclined to flow, as is the case with some of them, the admixture of a little gum suffices to prevent any such inconvenience. To protect a negative in printing, when it is not desirable to tamper with the original cliché, a piece of plain glass may be albumenized, and having been placed properly in juxtaposition with the negative, it is painted in any way that may suit the purpose. Albumen, being quite transparent, is preferable to any of the retouching varnishes, which usually contain a yellow lac in solution.

### THE PRACTICAL PRINTER IN AMERICA XII.

#### MODIFYING AND RETOUCHING NEGATIVES—(continued).

*Intensity.*—In glancing through a negative the intensity of it is also to be thought of, because it is necessary to adopt a certain mode of treatment for such a negative, whether it is intense, weak, or medium.

"An intense negative, as shown under the head of Printing Intense Negatives, is so called on account of the whites of the negatives, such as the face, hands, arms, &c. (when viewed by transmitted light) being quite dense; more or less so, according to the degree of intensity. Such a negative will yield prints that will be correspondingly light. When the negative is too intense, the whites of the prints will be what is termed 'chalky,' and if the exposure of the print is so far continued as to print in detail on those whites, then the shadows will print too black, thus making a decided black and white print. This is, however, treated under the head of Printing Intense Negatives. My object at present is to state the treatment of intense negatives before printing. As such negatives should be printed quickly, they should not have any colour on the



back of them, to take out shadows, &c., as described above, because it will then be necessary to delay the time of printing them a little, to prevent this colour from printing a harsh edge on the prints, as it will certainly do if the negatives are placed in the direct rays of the sunlight. Fill up these places, if necessary, with lead from the pencil on the varnished side of the negatives. If one coat of varnish will not take enough lead, then varnish again with a thin varnish, and then this new surface will probably take all the lead that is necessary. If, however, this will not answer, then blue-paint the negative, and print in strong sunlight, after having covered the printing-frame with one or more ground glasses, and even with a tissue paper, if it is found necessary. In printing intense negatives, print more for the shadows than for the lights.

**"Weakness.**—Weakness in negatives is the contrary to that which is described above, in relation to intensity. Weak negatives are very thin, *i.e.*, they are semi-opaque, or have more transparent lights than an intense negative, and when held to the light, objects beyond can be distinctly seen through the densest parts. Of course the rays of the sun would pass through such a negative more quickly than it would an intense one. The beginner must remember that the quicker the light passes through the negative the less bold will the result be.

**"The methods of treatment for such negatives are very numerous.** I have frequently blue-painted the whole of a face and hands of such negatives (with the exception, of course, of the eyes and shadows in the former) so as to permit deeper printing of the hair, dress, &c., while the face and hands are printing, thus making the prints bolder than they would be if it were not done. This in a great degree prevents flatness, as the resemblance between the light, shades, background, hair, dress, &c., is not so noticeable. If the background prints about like the figure, the prints can be greatly improved by printing vignettes from the negatives.

**"Flowing these negatives on the back with yellow shellac varnish, and then scraping away those parts of the varnish which cover the hair, eyes, and the shadows under the chin, &c., is said to be very effective,** as it permits the shadows and those parts of the negative which should print dark to print a shade darker than they would have printed before this treatment.

**"Printing under yellow and blue tissue-paper is sometimes very good, but the prints do not work so well in the further operations as they would if they were printed under white, and not coloured paper.**

**"Printing under a ground glass laid flat on the back of the negative, ground side down, or a piece of porcelain glass, or printing in deep shade, are all very good for weak negatives.**

**"The advantages and disadvantages of what has been said about weak negatives and their treatment will be described more at length under the head of Printing Weak Negatives.**

**"Draperies.**—One of the most important parts of a negative—to the ladies, at least—is the dress, &c., and upon this often depends solely their liking or disliking the photographs. Wrinkles in dresses, especially about the upper part of the body, are to be carefully prevented from printing if the wrinkles spoil the beauty of their otherwise fine form. Never, however, touch them if they do not spoil the figure. If the figure is a standing one, and there are many wrinkles about the waist of a dress, caused by an ill-fit on the part of the dressmaker, they should be taken out. This can be done with the lead-pencil. Does the lace-collar show well? If not, touch up the lacework, or, better still, send the negative again to the retoucher and get him to do it. All of these little things should be looked at by the printer before he prints from his negatives, and if there should be anything that you notice, and which escaped the notice of the retoucher, then you should never fail to get the retoucher to improve them, by a little more work, before you print a single proof from the negative.

Are the dresses in the negatives white? If they are, do you think that they will print well? Draw your pencil along the tops of the folds, so as to make the dress print bold, by having some contrast between the lights and slight shades. The above answers for a dress that has been about rightly exposed; but for an overtimed one, after the face, hands, &c., of the lady are printed enough, take a cloth, and, placing the negative-frame out in the sunlight, keep moving it over those parts of the negative and let the dress print still more. This is sometimes a tedious operation, but a very good one.

**"The negative, if you choose, can be printed by placing first one thickness of tissue paper over the whole negative, but on to the outside of the printing-board and over the head, hands, &c., of the negatives paste (if possible also on the board, but over the other tissues at any rate) several other tissues cut to the size of the places that you wish to prevent from overprinting, *viz.*, the face, hands, &c. These pieces of tissue paper should be pasted on the other whole pieces of tissue and directly over the places to be shaded. Do not place paste over all parts of the small pieces of tissue that are to be placed on the boards, but just touch the pieces sufficiently to make them stick to the rest of the paper. It is not necessary to have these pieces lay so very smoothly, and it will not matter much if the edges should happen to curl up slightly. Print face to the sunlight.**

**"This treatment will permit the dress to print darker without the tedious operation of shading by hand the face of the negative to prevent it from overprinting. This is particularly advantageous when a dozen or two prints are to be printed from this negative, and all the time and trouble that is required is only while printing the first print, as the rest of the order can be printed like a plain print. After the order is printed, the tissue paper can easily be packed away in an envelope on the glass side of the negative, and thus saved for future use. Dark dresses should sometimes be permitted to print after the face and other parts of the whites—such as the face, hands, &c.—are done, so as to obtain fine, rich draperies.**

**"Are there any tufts of hair projecting out beyond the head, and which you think do not look well? If there are, touch them out with the lead-pencil. Are the frizzles on the lady's forehead regular, and do they look pretty? Can the hair be improved in any other way than what has been mentioned? Are the frowns removed as much as they should be, taking into consideration the age of the subject? How are the deep, heavy lines in the face; are they all right? The hollow cheeks, cheekbones, and the ears; how are they? Do the veins on the hands and the cords in the neck need 'doctoring'?"**

**"Since we have examined about all parts of the negatives before placing them out to print, we will watch and notice to see if the places doctored are properly done; that the prints are as bold and brilliant, yet as soft, as they should be; and if there is as much detail in the prints as we wish."**

## THE PRESS AND THE EXHIBITION.

THE comments of the press upon the Exhibition have not, up to the present time, been so numerous as on former occasions, but have for the most part been highly complimentary. According to our custom, we place on record such notices as come under our attention.

(From THE MORNING ADVERTISER.)

Right were those, indeed, who used to predict, in the early days of Talbotype work, when the tentative steps of the artistic explorers over ground where they were met at every turn by the difficulties of chemistry, a science very little known to them, that the art was in its infancy. The pallid, washed-out specimens of what we may fancifully call prehistoric photography—lent the council for this occasion by the president, Mr. Spiller, F.C.S., and numbered 408, 412, 415, 416, reminding us very comically of our early studies—give rise to a reverent thought of Fox Talbot, and a feeling of gratitude that it has been permitted to



us to witness the splendid development around. The council, no doubt, found a somewhat heavy task before them if they took possession of this ample suite of rooms with any idea of covering the walls; but it must be admitted that they have gone far towards that end. They have covered, in fact, all the space available in the principal gallery and three smaller ones, and no justice could have been done to another row above the line had they attempted the experiment. Now let us take notice, in the first place, of the "Crawshaw competition" works, in portrait and landscape—this being the principal feature of the exhibition—although we shall have to deviate from the numerical order of the catalogue—in fact, to begin in the middle. Most agreeably for the society of which he is a member, Mr. Robert H. Crawshaw, a master of high-class photography, has been so dealt with by circumstances as to be in a position not merely to indulge his taste for the pursuit to the utmost, but also generously to stimulate the ardour of his fellow-workmen in the craft. He has this year given for competition (and not for the first time) certain Crawshaw prizes as follows:—The first is £50 for the best collection of three photographs of heads taken direct from life, not less in size than 20 inches by 16, and the heads not more than 8, or less than 7, inches in height. The second is £25 for the second best collection of three heads. The third is £25 for the best collection of three heads 15 inches by 12 over all, and the heads not less than 4½ inches long. Prize the fourth is £12 for the second best similar collection. The fifth is £25 for the best enlargement, not less in size than 20 inches by 16, by any method. The sixth is £25 for the best collection of three landscapes not less than 10 by 8 inches; and the seventh £12 for the second best ditto. The eighth is for the best landscape of any size from nature. This is a very open race, with many fit starters in the profession, to the second of whom Mr. Crawshaw has allotted a consolatory £5 prize. For the portrait prizes there were twelve or thirteen competitors, sending fifty works, most of them elaborate, many of them beautiful, some even too conspicuously so—but this is quite a matter of taste. One might as well desire a lovely woman to be plain as ask her to disguise her charms in shadow and rags with any good grace; therefore, of course, the majority of sun-portraits continue to reflect, immortalise, and enhance the charms of the toilettes as well as of the sitters, although such highly decorated objects do not find equal favour with the judges. The first prize has fallen to Messrs. Chaffin and Son, of Yeovil, who exhibit six portraits, three in the two first classes, numbered 337 to 342, all remarkable for the apparently complete absence of affectation both in the sitters and the treatment generally. The second prize in Class 1 was decreed to Mr. Crawshaw, whose gamekeeper's head (332) is a powerful work, worthy of the honour. Retaining this, the giver of the prize waives his claim to the substantial outward evidence, which passes into the worthy hands of Messrs. H. P. Robinson and N. K. Cherrill, of Tunbridge Wells. These thoroughly able artists have the second 25l. prize in the first class, and the first 25l. in the second class. The 25l. for best enlargement goes to Mr. C. Ferranti, of Liverpool, exhibitor of Nos. 317-320, four enlarged photographs. Among the competitors in this class we find the accomplished Mrs. Julia Cameron, a popular artist of the first rank, esteemed almost as an artistic prophetess by a large section of tasteful society. W. Street (of Waterford), W. Neilson (of Edinburgh), Vandyke and Brown (of Liverpool), B. J. Edwards (of Hackney), the Woodbury Company, of Hereford Lodge (Brompton), and Mr. John S. Palmer (of Stonehouse), with an extremely pleasing collodion transfer on toned paper from a small untouched negative, are all found among the runners, and, in sporting phrase, deserve places.

In the Crawshaw Landscape Stakes Messrs. Robinson and Cherrill again carry much, if not all, before them. Their three exquisite productions, Nos. 276, 277, and 288, severally entitled "Repose," "Under the Greenwood Tree," and "Declining Day," prove that neither the taste nor the skill have waned that presided years ago over "Bringing Home the May," and subsequently over "The Willow Tree Aslant the Brook." By the gift of intelligent selection of subjects, coupled with a happy combination of parts and skilful handling, these gentlemen succeed in obtaining effects hardly to be expected by outsiders or to be rivalled by professionals.

The second prize, "for any landscape," was hard to win among so many able starters; but as more than one could not have it, No. 286, one of several splendid examples of Welsh scenery, by W. D. Sanderson, of Deansgate, Manchester, was pronounced the winner, and worthily deserved it. "La Ville d'Eu" (293), in the immediate neighbourhood of the constellation

above referred to, was printed as long ago as 1869 by Mr. Sydney Smyth, and is a beautiful work. There is a weird solemnity perfectly riveting about J. Brier's "Pandy Mill" (302), and Mr. Henry Piper's foreshore effects from the wild coast of York and Durham (306) are as happy and original achievements as can be imagined within the present known domains of photography. Among the as yet undecorated competitors, whose claims on various grounds may have somewhat puzzled the judges, are many pleasing and romantic subjects. Such, for example, are the "Berwickshire Glen" (253), by G. Bruce; an enlargement of a very popular mill subject among Devonian rocks, by Mr. B. J. Edwards, of Hackney; a delicate morsel or two at Goring, and on the beautiful river Cherwell, near Oxford, by J. Vaughan (268 and 269); and a "Lock on the Avon" (272), by the same tasteful hand.

Having dealt to the best of our ability with the prizemen, we may now notice some of the more prominent of the non-competing, to whose works the fall of day permitted us to give some measure of attention. The frame No. 1 displays six "photographs finished by the process" of Mr. H. Vander Weyde, the process being apparently a very pleasing and successful application of chalk with occasional Indian ink, somewhat in the familiar manner of Mr. Frederick Piercy, who has for some years had repute as an able adapter of photography to portraiture. Next to these, but yet unnumbered, appeared a series of twelve telling copies of marbles from the International Exhibition by Mr. W. England, we presume a member of this society's council; also a frame of clever "scraps of expression," without pretence of decorative make-up, by O. G. Rejlander. Next follow Nos. 7 to 14, eight of Valentine Blanchard's recent triumphs, including faithful likenesses of such public men as Messrs. Dillon, Croker, Manville, Fen, and Barry Sullivan. The permanence of modern photographs from the studios of our leading men seems now fairly enough ensured to guarantee to those of Mr. Blanchard, and it may be others, the future dignity and estimation of family portraits. Our artist has here a number of other specimens of his excellent quality, which it were needless to particularize. We now come to a very long series of permanent works called "autotype plain enlargements," by Messrs. Spencer, Sawyer, Bird and Co., of 36, Rathbone Place, after small negatives taken from a great variety of original subjects by different hands. The landscape study of a cottage *ornee*, near Cookham, nestling among the piled-up woods that fringe the river bank, is a delightful *souvenir* of a well-known and well-loved locality. The firm also exhibits two very fine and large tree studies from other localities, and a magnificent Chinese "joss-house," or temple, from a negative taken on the spot by J. Thomson, Esq., F.G.S. These three studies are at the south end of the principal room, and are an imposing feature of the exhibition. The same exhibitors, again, show autotype prints, on both panel and canvas, to be used as permanent bases for colour; selections from Turner's famous *liber studiorum*, printed antotypes of machinery, engravings, and other objects; all valuable aids to what may be termed "trade photography." The small study by Hugo Theile (52) of an admirably dressed child artistically posed in an arm-chair is clever enough to arrest attention *en route* towards Vernon Heath's collection, of which the "Ben Venne" (63) and "Waterfall" (74) seem to be the masterpieces. This eminent artist is fully represented also in other parts of the rooms, but does not enter himself in the competitions. Mr. Edmund Smith, of Leamington, in No. 68, "The Spring," and others, indicates successfully a loving regard for the manner of the Tunbridge experts. M. Boucher and Signor Lombardi, of Brighton, exhibit captivating recollections of Brightonsque portrait subjects; it were hard if they could not find stimulus to exertion in the fair and young of a locality where purity of atmosphere also lends its best assistance to the work. The heads of Sir R. W. Carden also are among the most felicitous of the latter artist's flights. The "Caernarvon Castle" and "Low Water" (97 and 99), by Colonel Stuart Wortley, both done by his "New Dry Uranium Method," are splendid pieces of nature. The term can hardly be applied, perhaps, to the grand pile of the building, but it may be to the characteristic foreshore. One is disposed to return to them again and again—they are so very natural. The frame No. 107 is important, from a business point of view, as containing impressions from valuable prints, printed by the Woodbury Permanent Mechanical Process, at their Hereford Lodge Works. To this complexion has photography come at last, and so has Sol himself been harnessed to the Muse's car. In our haste, we have omitted the beautiful "Autumn Sunset" (117), a fine study by F. M. Sutcliffe. "Buy My Caller Herrin," and



"Do You Think So?" (164 and 165), studies by H. G. Cocking, of Peckham, are most attractive; and quite as much can be said of four studies from the Woodland (170) by Mr. E. Fox, of Brighton. Messrs. Mayall and Co. contribute a fine series of large portraits (178-180), comprising Dr. Pritchard, Dr. Benson, J. A. Spencer, Esq., Miss Leith Hay, and Madame Patti. Mrs. Cameron's works, as usual, claim attention by their peculiar characteristics, and we find many of her pieces more comprehensible than ever by common folk, and therefore more welcome. The "Lady Hood and Children" (181), Miss Bateman (182 and 203), and King Henry (205) are not too deeply immersed in mysticism to have their charms unnecessarily obscured. J. Werge has sent, under the name of "The Children's Portrait Company," a number of very pretty portrait studies of nude children, sparsely draped, but not indelicate—a new and interesting idea, at all events, to the general public. The Woodbury Company's illustrations to Messrs. Nasmyth and Carpenter's work on the Moon (135) are, like all lunar photographs, awfully suggestive of a huge volcano-land. But we must here bring our remarks to an end by recommending an attentive perusal of the large transfer collodion enlargement (132) by Jabez and Alfred Hughes, of Ryde, of a painting of a lion's head, by Sir Edwin Landseer. The original is in the possession of the Queen, and is probably not the worst specimen of the master known. The transcript in Suffolk Street will be found a leading feature of the exhibition. We have left her Majesty and her treasure to the last, so who can find fault if he is unnoticed now for want of room?

(DAILY NEWS, October 14th.)

Last night the new session of this society commenced its operations by the usual exhibition of photographs, which was held this year in the Suffolk Street Gallery. The society does not seem to have suffered by the change of locality or the change in the time of meeting, which has also been altered from November to October. Although the rooms of the Society of Artists, where the soiree was held, are very spacious, they were not more than sufficient to accommodate the numerous specimens of photography which had been sent in, nor could the President of the Society, Mr. Spiller, find fault with the number of visitors who attended on this the 19th anniversary of the Exhibition. There were altogether 466 exhibits, besides miscellaneous specimens, displayed on the central tables, containing an album of portrait enlargements (Crawshaw Competition), by Carlo Ponti; transparencies of sculptures in the Albert Memorial Chapel, by the Misses Davison, &c. The Exhibition consisted, as usual, of portraits, landscapes of celebrated localities, sketches of nature, animals, plants, and curiosities. It would be quite impossible to do anything like justice in detail to the merits of the artists where all can pretend to some degree of excellence, for it is certain that without that attribute the pictures would not find a place on the walls of the society. Mr. Robert Crawshaw has continued his gift of prizes for enlarged landscapes and portraits this year, and these represent a very notable section of the Exhibition. There is also a large series of views from New Zealand, India, and the Asturias. The contributions of Spencer, Sawyer, Bird, and Co., are also numerous, and will attract notice. Messrs. J. E. Mayall and Co. send some excellent portraits. Lieut.-Col. Dixon has various representations of scenes and places of interest in India, and Lieut.-Col. Roche of places of interest and beauty nearer home. There are some excellent exhibits by Ferranti, Lombardi, Valentine Blanchard, &c. But, as we have said, it is impossible to mention all. There are three contributions, however, by Mons. L. Bertin, Nos. 93, 207, and 213—all figures—which deserve notice for the vigour and judgment of their execution. There are but few instantaneous views and dry-plate subjects, but there are some examples of the earliest preserved plates. There are numerous representations of the mechanical printing processes, and some engravings. The exhibition will remain open till Wednesday, the 5th of November, from ten a.m. till dusk, and on Monday and Saturday evenings from seven till ten.

#### THE ACTION OF RAYS OF DIFFERENT REFRACTIBILITY UPON THE IODIDE AND BROMIDE OF SILVER: THE INFLUENCE OF COLOURING MATTERS.

BY M. EDMOND BECQUEREL.\*

It is known that the physical condition of substances sensitive to light, as also the presence of bodies which aid in the chemical action, and are principally of an organic

nature, will not only augment their sensitiveness, but may also vary the portion of the luminous spectrum by which they are impressed. In this respect iodide of silver is a body which gives the most decided results. If this compound is prepared, as in the Daguerreotype process, upon a plate of silver, and exposed to the action of the solar spectrum without having been previously impressed by light, it is only sensitive from the blue to the extremity of the ultra-violet: that is to say, that the limit of the chemical action on the least refrangible side is found between F and G, and the maximum action between G and H, near to G. But, as I have already shown in 1840, if the iodide of silver has been first of all insolated for a very short time before it is exposed to the action of the spectrum, then not only is it sensitive between the preceding limits, but it becomes also impressionable between the red and the blue, with a second maximum of action situated near D, the intensity of action depending upon the degree of insolation to which it has been subjected. This is a remarkable instance of change in the zone of sensitiveness, which is due solely to the purely physical modification to which it has been subjected.

At the same time this effect of the red and yellow rays takes place, under certain conditions, without having recourse to the action of mercurial vapour; and if you examine, after a certain period, the effect produced upon an iodised silver plate, it will be seen that the reduction of the silver gives a trace of matt white in this prismatic region, stretching even a little beyond the visible red, while the same effect produced in the blue and violet only presents a trace of black, a proof of a physical state different to the reduced silver. Use has been made of this property of yellow and red light in rendering images apparent upon iodised plates of silver, without mercury, by the sole action of light.

Iodised Daguerreotype plates exposed to chlorine or bromine, and, after a preliminary insolation, exposed to the action of the spectrum for a short time, will also present in the red, and even beyond, results different to those which ordinary light produces; but if the exposure to the spectrum is of very long duration the effect is not so obvious. But with or without the aid of mercury vapour, there is to be seen in the yellow and red, and even beyond, the reduction of silver of a whitish tint, different to that afforded by the violet rays.

If iodide of silver is obtained by double precipitation, and fixed upon paper or incorporated in collodion or gelatine, the effects observed may be different according to the conditions of the luminous action. When precipitated and in a pure state, we know that it is very nearly inactive; fixed upon paper, and in presence of an excess of nitrate of silver, which aids the decomposing action of the light, it becomes very sensitive, and, without the employment of the developer, it shows the results of continuing rays and two maxima of sensitiveness, the one in the yellow, and the other in the blue violet. Bromide and chloride of silver behave in the same way.

If the iodide of silver is incorporated in the collodion, and constitute a sensitive film such as is used in photography, and if, insolated or not insolated previously, it is exposed in a moist state to the solar spectrum for a sufficiently brief period, and developed either by protosulphate of iron or pyrogallie acid, you observe only an action extending from the ultra-violet to between F and G, with a maximum of action between G and H, near to G. Chloride of silver behaves in the same manner, but bromide gives under these circumstances a little longer impression, reaching to green. The influence of this preliminary insolation is not seen upon a wet collodion plate except under conditions which have not yet been definitely fixed upon. But if you work with dry collodion films, you may obtain the same effects as with plates and papers under the conditions referred to above, and by giving the plates a preliminary insolation, secure impressions of the less refrangible rays of the spectrum.

\* *Comptes Rendus.*



Dr. Vogel observed some time ago the curious fact that if there is mixed with bromised or iodised collodion different colouring matters, the span of the sensitive zone in the spectrum may be altered, and the surface may become at once impressionable to the red, yellow, and green rays, according to the nature of the substance in admixture with the collodion; so that the collodion surface becomes sensitive to rays which, before the introduction of the colouring matter, had no influence. Among the colouring matters which may be cited are coralline, aniline, green, &c. By employing coralline there is an extension of the spectrum image as far as orange, with a minimum of action in the least refrangible rays between D and E in the green.

How does the colouring matter act? is the question. Does it merely act, by its presence, in aiding the reducing action of the light, and rendering the silver salt sensitive to the action of other rays besides the blue and the violet, or does it act like a screen surrounding the compound? or, as Dr. Vogel imagines, do the rays absorbed by the colouring matter mixed with the iodide become active by reason of this absorption? In the last case, we must ask how can the iodide of silver be affected by an absorbent action which goes on outside it? It is difficult to understand this first of all, or, rather, to admit that the colouring matter adhering to the iodide gets close enough in connection with it to transmit to it its special absorbing power for certain parts of the spectrum.

I believe that these results have some connection with those obtained by me several years ago, to which I have just alluded, and for this reason I desired to renew my observations. In this, M. Deshayes, of the *Conservatoire des Arts et Metiers*, came to my aid, and the careful manner in which the experiments were conducted may be estimated by the results presented to the Academy of Sciences. M. Deshayes has been enabled to reproduce some of the results obtained by Dr. Vogel with several colouring bodies, and notably has been enabled to repeat successfully the obtaining of the yellow and red rays of the spectrum without any preliminary insolation, with the aid of iodized and bromized collodion mixed with coralline.

In operating with chlorophyll mixed with collodion, a result was obtained which deserves mention. The action of the spectrum upon wet or dry collodion prepared with iodide or bromide of silver and mixed with chlorophyll (having but a slight greenish tint) gave an image of the spectrum much more extensive than that observed where there is no colouring matter in the collodion. The limits of the action which appeared after a short exposure to the spectrum was from the ultra-violet to beyond E in the green, whilst the picture of the spectrum is much more limited, as I have described above, when no chlorophyll is present. Moreover, a more prolonged action of the spectrum gave, after development with pyrogallie acid, and intensifying, a weaker impression, but a very clear one, from E to a little beyond B in the red, with this remarkable peculiarity that there was a vigorous band between the rays C and D, with these lines at the extremity. On examining carefully the impression of the spectrum, a second band, rather less vigorous, or a second maximum, beside the less refrangible one, was to be seen, and again, fainter bands in the green; so that the portion EB showed several active bands, and in the interval were several minima of action; but what was most remarkable was, that the first active band CB was much more vigorous than the others.

This result was obtained in all cases, and with different proportions of chlorophyll. As the action of this active band CB is less vigorous than that of the violet portions of the spectrum, it will be necessary, when the effects of both portions of the spectrum are required on one and the same surface of equal intensity, to let the red act upon the film five or ten times as long as the violet.

In one case only was a different result produced upon a film which had received preliminary insolation. In place of the active band CB there was an absorption band; but

as the action appeared similarly reversed in the middle of the region CH, it is possible that this plate turned out, accidentally, a positive instead of a negative.

If you examine by means of a spectroscopie the bands of absorption in a solution of chlorophyll, you see, according to the concentration and condition of the solution, that the bands vary in breadth and position. There are two to be found in the red and the orange, and the least refrangible, which has been called the characteristic band of the chlorophyll, preserves, in general, the same place, and has the same dimensions, as those of the active band upon the sensitive collodion mixed with chlorophyll—in other words, the lines B and C of the solar spectrum. Of this I was able to assure myself by means of a certain bulk of collodion which had served me for my experiments. The first absorption bands of the chlorophyll appear, therefore, to correspond to the active bands of the sensitive film, in accordance with Dr. Vogel's experiences with other colouring matters.

It behoves me to remark, moreover, that chlorophyll is a phosphorescent substance, and it is well known that the light emitted by virtue of the nature of the substance is in great measure composed of red and orange rays, whose limits of refrangibility correspond equally to the limits of the first absorption band. It may be said that the light that is chemically active upon collodion mixed with chlorophyll is the light of phosphorescence, for this is principally given by the other rays of the spectrum than those comprised between B and C, and the method of experimenting completely divides the active portions from one another. This coincidence should be mentioned here, because, in the photographic image, as in the emission of ordinary light, the part BC has an intensity much superior to that of other active bands of the less refrangible portion of the spectrum.

Thus, as I have already said, the action observed in the less refrangible rays of the spectrum upon salts of silver surrounded by chlorophyll can scarcely be attributed to an absorption of rays by this matter acting as a screen in the ordinary way, for such absorption would be exercised by the colouring matter itself outside the silver compound. The effect ought, indeed, to be the reverse of that obtained. We must, therefore, suppose that the colouring matter adhering to the sensitive compound, although in the shape of a very thin film, forms one substance with it, and transmits to it the action of light upon it. The sensitive compound then acquires the absorbent properties of the substance fixed upon it.

If this is not the case, the chlorophyll acts simply like other organic bodies, rendering the haloid compounds of silver sensitive to the action of the less refrangible rays, and there would be but a simple coincidence in the positions of maxima of action and the maxima absorption of the colouring matter when this acts as an absorbing screen. This coincidence may exist just as well as that of the position of several maxima of absorption with the position of maxima of intensity of the spectrum by emission of phosphorescence, or by the action of the substance itself. The phenomena of luminous absorption are so little known that reasons for their existence can scarcely be given, but the hypothesis I have cited seems more in harmony with the results obtained.

Whatever may be the explanation of this matter, however, the action of a colouring substance in a very thin state, enveloping a sensitive chemical compound, shows that perhaps substances preliminarily insolated, such as the iodide, bromide, and chloride, do not become sensitive to the action of the less refrangible rays except by a change in the colour or state of their surface, the absorbent power of the surface, for the different rays of the spectrum, being then changed. In this way we should take into account the continuing rays, whose existence I pointed out some time ago. By a similar action going on in different parts of a plant, the luminous action may be modified by the presence of substances—chlorophyll, or other colouring matters—such as are found around and in the interior of its cells.



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## LAMBERT-TYPE: A METHOD OF ENLARGING AND FINISHING NEGATIVES.

THE method of enlarging and finishing negatives known as Lambert-type has, for some months past, been exciting considerable interest amongst French photographers, as our readers have already learned from the letters of our esteemed Paris correspondent, Mons. Lacan. During a recent visit to Paris we were favoured by Mons. Lambert, the inventor and patentee, with full opportunities of witnessing his operations in all their details. We may remark, before proceeding to details, that M. Lambert is a photographer of great intelligence and enthusiasm, and one of the most facile and perfectly skilled manipulators we have ever seen. He has been engaged for some time in enlarging for the profession, and the method now under consideration is, he states, the result of five years' experiment in this direction. The protection by patent was, we were informed, an after-thought, the result of some unfair practice in relation to the process of some one with whom the inventor had business relations. The process having been patented, Mons. Liebert, a skilful and well-known Parisian photographer, with a shrewd knowledge of business, has undertaken to aid in introducing the process to the photographers of the world. The two examples now exhibited in Suffolk Street will enable photographers better to judge of the results than many pages of comment.

We shall proceed to describe the operations as they came under our attention, some, of course, being already familiar to English photographers who have given attention to enlargement. Any negative is accepted for enlargement, and the better the quality the better the result; but no attempt is made to retouch or improve the small negative, nor is any retouching attempted on the transparency. The latter is produced on a suitable carbon tissue, the special characteristic of which seemed to be a thick layer of gelatine with very little colour. From the carbon transparency an enlarged negative is produced in the usual manner on wet collodion, with iron developer. And here we noticed the first special peculiarity of Mons. Lambert's method of working. Instead of aiming to produce a negative with any approach to printing vigour, his object was to produce a thin delicate image full of detail, but with little contrast and scarcely any density. The iron solution was flooded freely over the plate, washing over the edges much of the free nitrate on its surface. The result rather resembled an ordinary collodion positive than a negative, and no attempt was made to intensify it. "All the intensification," he remarked, "will be effected when my mode of finishing is applied." This thin delicate image is fixed and varnished, and is then ready for finishing.

The process of finishing is commenced by attaching to each side of the negative a sheet of transparent paper. This has been described as *papier vegetal*. This, Mons. Liebert incidentally remarked, was an error; it was, in truth, a *papier mineral*. On this point we can only give description, as the paper is, we understand, expressly made for the purpose. It is a very thin, very tough, very transparent paper of fine texture. It is almost as thin as tissue paper, but it is much more tough; it is as transparent as tracing paper, but is free from oil, turpentine, varnish, or any fatty body which might interfere with pencil working on its surface; it is very smooth and fine in texture, but at the same time presents a free tooth to blacklead. Paper known to English stationers as bank-post, very heavily rolled to make it thinner and more transparent, would produce the nearest approach that we know of to the paper used. A sheet of this paper is attached by an edging of gum to each side (that is, back and front) of the thin negative we have described. This process alone seems to the eye to have materially added to the intensity of the negative; but as the additional thickness is equally applied over shadows as well as lights, not much practical or printing addition is gained; although, as experience has proved, a little is really gained by this operation. But the process of intensification is in reality to begin. It is effected by working on the paper at the back of the negative with powdered blacklead and a stump, the work being broad and comparatively rough; the softening effect of every touch printing through the thickness of the glass being kept in mind. Hence broad effects of light and shade are only considered when touching on this side of the negative. Next comes the work on the film side, and this is effected with a blacklead pencil, the softening effect of the stump being employed wherever it is necessary. Working freely on paper, sharp touches or soft touches can be easily secured at will, and erasure or modification with india-rubber is not impossible. Certain it is that the work is easy and rapid, a life-size negative being completely finished—defects removed, intensity added, and general softness and finish conferred—by the application of little more than an hour's labour. The results, when completed, are always good, often charming, and they are, we must confess, surprising, as the means seem so inadequate to the result. Mons. Lambert is eloquent and enthusiastic in describing the peculiar value of the two semi-transparent, or semi-opaque, surfaces of paper upon which the touching is effected in breaking up and diffusing the rays of light as they traverse the negative, and so giving a softened effect to every touch, suggestive of much laborious work from a skilled artist. There undoubtedly is the result, and there are the comparatively rough, and positively simple and facile, means by which the fine result is produced before us, and we cannot gainsay the theory.

By this time it has struck many readers that covering negatives partially or wholly with tissue or tracing paper, and working on that paper both lead pencil and powdered blacklead and a stump, are practices not unknown, and which have not been practised without record in this country. Mr. Bedford, in our YEAR-BOOK for 1868, described the value of tracing-paper so used in improving landscape negatives. Mr. Robinson and Mr. England have also practised and described similar methods. Mr. Blanchard and others have also described the advantages of applying yellow pigments to the back of the plate, and the general principle of modifying negatives by various forms of this kind of treatment has been generally known and widely practised. As to the points of novelty claimed by Mons. Lambert, and specified in his patent, we are not at present informed, as we have not seen the specification of his patent, and we did not dream of stopping the current of a courteously communicative gentleman's explanations by discussing the question of the strict novelty of every operation. But it struck us that the systematic reliance on this method of treatment for all intensification and finish is a specific novelty. It is not a method of



modifying a negative by the application of a little tracing-paper here and there, or the touching or masking partially at the back, partially at the front, which is adopted; but a systematic reliance upon a definite system of work: that is, the application of two sheets of paper, the application of intensity at the back and of finish at the front, and the securing by this combination of means a fine result, highly finished, but flesh-like, by the expenditure of less labour and less time than we have hitherto seen.

We have referred to M. Lambert's skill and ingenuity in manipulation, and we may take occasion shortly to describe various little contrivances of value which we saw in his establishment. But we must especially refer to his method of replacing an imperfect background in a portrait by printing in any other which may be desired. It is, in effect, similar to a method of double printing which Mr. Robinson has described more than once in our pages, but most ingeniously effected. Mr. Robinson has described the method of *vignetting* the two portions of different negatives to be joined into each other. This is, in effect, the method employed by M. Lambert. The enlargement of two children in the present exhibition in Suffolk Street is an example. The original background was imperfect and unsuitable. A mask of yellow paper was roughly cut to the outline of the figures, therefore, and placed outside the glass of the printing frame. A small hog-hair tool was then dipped in a little Indian red oil colour, and a graduated edging of about one-third of an inch broad round the outside of the cut-out edge of the mask, slightly overlapping the edge of the figures. Where soft draperies or flowing hair almost receded into the background, this was done softly; where the edge was sharply defined, the edging was more crisply applied. We should here explain that M. Lambert prints in a circumscribed space, surrounded by high houses, so that he prints, practically, with a vertical light; and where the situation does not naturally afford a similar light, he recommends using a box, or some similar method of cutting off the extreme lateral rays in printing. This vertical light is of essential service in the process we are describing. The imperfect background was got rid of without any trace of masking round the figures. But it was not simply to the mode of finishing the edges of the mask which M. Lambert attributed the results, but to the series of means by which the light was broken up and diffused round the edges. There was the edge of the mask and of the paint passing through the thickness of the glass of the printing frame, and then the two thicknesses of paper and one of glass through which the light again passed before reaching the sensitive surface. A background negative with a piece of woodland scenery from nature being selected for the children's figures was printed in by the aid of a similar plan of masking and softening the edges. As this negative was sharp, and might thus give the background too pronounced or advancing a character, when it was about half printed M. Lambert deliberately moved the position of the print slightly, so as to partially double the image, and, by destroying its extreme sharpness, send it back considerably, adding much to the value of the effect. The results of the operations we have described are, as we have said, now hanging in Suffolk Street, and our readers will be in a position to form some idea of the character of the *procede Lambert*, should it come under their attention as a matter of business.

## THE PHOTOGRAPHIC EXHIBITION.

### LANDSCAPES.

THERE is much fine landscape work in the exhibition now open in Suffolk Street; but, with the exception of the Auto-type enlargements, there is nothing of similar important dimensions to those we have been taught, of recent years, to look for from Mr. Earl. Col. Stuart Wortley exhibits three very fine landscapes of large size, produced direct, about twenty by sixteen inches, as examples of the work of

uranium dry plates, of the excellence of which they are admirable examples. "The Hill-side" (98), a circular picture, and "On the Seivout River, Low Water" (99) please us best." "Caernarvon Castle (97), in many respects a fine picture, is, we think, spoiled by the clouds of the printed-in sky apparently enveloping the turrets of the castle. The clouds are also too pronounced, and spoil the composition of the picture. There are also some fine examples of large landscape work by Messrs. Bool, Messrs. Hudson and Purnell, and Mr. Sanderson in the Crawshaw lists, to which we shall presently refer.

A dozen 12 by 10 landscapes exhibited by Mr. W. Bedford comprise some of the finest landscapes in the exhibition, all the excellent traditions of Mr. Francis Bedford's work being maintained in that of his son. Especially beautiful is the rendering of water in the river and lake scenes, and the perfection of atmosphere in every picture. A scene on the River Glaslyn, a view of Dina's Lake, a scene on the Dwryd, and a river scene at Aberglaslyn, especially charm us, and a rendering of hoar frost is unusually fine; but the whole series admirably joins the perfection of technical photography with fine artistic feeling in composition and light and shade. Mr. F. M. Sutcliffe exhibits a goodly number of very fine small landscapes. The size is generally about 7 by 5, but there is enough in each to form a subject. For instance, in 41 and 42 we have "Tired of Waiting," a pretty landscape with a well-placed figure at a stile; and "a Gleam of Sunshine." The former is the most effective picture. Again, in 67, we have "Hay Time," one of the prettiest pictures in the exhibition; some other good pictures by the same artist possess similar characteristics. Mr. F. Howard exhibits some fine small landscapes, a trifle of under-exposure slightly marring one or two of the forest scenes. Mr. F. Beasley contributes somewhat largely to the landscape department, his work being, we believe, by the Fothergill process, of which he has retained a faithful exponent, always producing good work. Mr. Dew has some good effects in the charming neighbourhood of Leamington. Two frames of views, by Sir Thomas Parkyns, contain some very interesting and excellent pictures. Mr. Vernon Heath contributes largely this year, his pictures being marked "Not for competition." The same neatness, softness, and fullness of detail which have generally characterized his work are present here; but there is a lack of pictorial inspiration. As a rule, the photography is, as photography, faultless, and in 72, "Maenturog from the Garden," there is something more than mechanical excellence—a piece of fine pictorial work. In Nos. 63 and 64, two views in the neighbourhood of Loech Katrine, with delicately rendered foliage, the pictorial value is spoiled by an error of taste in mounting, which we have before cautioned photographers against adopting. The oval outline of the vignettied picture is exactly followed by a mount with oval aperture. Vignetting in landscape work requires considerable taste and skill to be effective. The gradation of the edges should be free from any approach to abruptness, but soft, irregular, and spreading, whilst the subject and treatment of the picture generally should be light and sketchy. The greatest value will be given to the effect of vignetting, and compactness in the picture secured, if a square or oblong mount, considerably larger than the vignette, be placed over it. A mount with aperture little larger than the vignette, and following its outline, spoils all feeling of space.

Mr. H. Whitfield exhibits three small pictures with good qualities; No. 77, however, entitled "Summer Shade," is too heavy, black, and under-exposed for its title, as such shade should have space and transparency. Mr. Gale's reminiscences of rambles with the Field Clubs contain many charming little bits. Mr. J. Bowen's views of the Baptist College, Regent's Park, contain some very admirable interiors. Mr. H. Paget Swaine's views, produced on Liverpool dry plates, are in no wise inferior to high-class



wet work, and are very excellent pictures. "Mosaics in the Albert Memorial Chapel" at Windsor are fine photography, and display the good taste always present in the works of the Misses Davidson. Col. Roche sends several contributions, all good. His "Tintern Abbey" (112) is very fine, and some of the Swiss and Killarney views are excellent. Some good landscapes are exhibited by Mr. Pendryl Hall, his view of "Conway Castle from the Island" pleasing us best. A frame of London views of various size, examples, we presume, each of a different series, exhibited by Mr. F. York, are very capital, and far exceed in excellence and pictorial treatment the usual average of street views. Some views and interiors exhibited by Mr. E. Fox possess good qualities, but are a little wanting in force and relief, delicacy being carried to excess; whilst adjoining them some pictures of a similar class by Mr. Dunmore err in the opposite direction, being spotty and confused from under-exposure. Messrs. McAndrew and Stenning send a large and interesting series of Spanish views from the province of Asturias, containing some very fine picturesque work, the skies being in many cases printed in. In one case, however, it seems to us that an effect much in exaggeration of nature is produced, where the clouds seen underneath the arch of a bridge gave the latter an appearance of magnitude equal to that of a huge mountain. Speaking of clouds reminds us of the clever cloud studies of Mr. J. C. Stodart, of Margate. The same gentleman's four large instantaneous views of Margate (385-388) far surpass, in photographic and pictorial excellence, the majority of similar works we have seen. A large number of views sent in by Mr. J. A. C. Branfill will interest experimental visitors as illustrating the qualities of various kinds of dry plates. The New Zealand views of Mr. D. L. Mundy are very beautiful and perfect in themselves, apart from any extraneous source of interest; but the peculiar difficulties under which the majority of them were produced render them especially interesting. Mr. Mundy was engaged for two or three years in producing a complete series of views of every place and thing worth photographing in New Zealand, the whole of his material, apparatus, and facilities of every kind, being transported on pack-horses the whole of this time. Much of the work is not inferior in delicacy and perfection to the best produced under the most favourable conditions. Mr. W. G. Hunter exhibits a series of very charming cabinet views, singularly delicate and picturesque, and possessing a peculiarity of tone and texture resembling prints on opal glass. Mr. G. W. Wilson, of Aberdeen, exhibits a number of his charming cabinets views of Highland scenery. Col. Dixon's large series of Indian views are very interesting. Mr. W. J. Hollebone's Swiss views on Wortley dry plates are excellent. Mr. Ferncey has some good landscapes, in some of which a tendency to under-exposure should be guarded against. Mr. S. Thompson exhibits photographs of sculpture, which are exceedingly perfect. Mr. Frith sends some capital views. There are also views by Mr. Dyball, Mr. Whiting, Mr. Wray, and some others which do not call for special comment.

Turning for a moment to the landscapes competing for the Crawshaw prizes, we may remark that, whilst they comprise many excellent pictures, they are scarcely equal as a whole to our expectations as competing for prizes of upwards of fifty pounds. We feel some difficulty in entering into detailed comment, from the simple fact that we recognize many of them as pictures exhibited some years ago, and we have no certainty as to which are new pictures. Should a similar competition be again opened, it would be wise to make production within the year a condition of competition, as the aim is clearly to stimulate the production of good work, not merely to induce the exhibition of good work done some years ago. As no such condition was made, the competitors were clearly at liberty to send in any work they chose, and the judges were bound to award to the best work, without question as to its date. Amongst the manifestly new work, we may mention the

large pictures by A. and J. Bool: Nos. 249 and 250, river scenes, with well-placed figures, are exceedingly fine. Mr. Bruce's "Dunse Castle," "A Berwickshire Glen," and "Langton Mill Burn," are clearly new, and exceedingly fine, but perhaps a little deep in printing and black in tone for landscape work. Mr. Roger Williams and Mr. Gulliver both send some capital landscapes. Mr. Edwards's enlargements of Mr. Henry Cooper's landscape negatives give fine pictures. Messrs. Hudson and Purnell send large views from the Isle of Wight which are very excellent. Mr. Crawshaw himself sends some most charming views of South Wales scenery. Few of the landscapes exhibited please us better than Mr. J. Brier's "Night at Styperson, Cheshire" (No. 300), a thoroughly poetical picture; and all Mr. Brier's landscapes are, we may add, excellent. Mr. W. Nicholson sends some very excellent examples of Isle of Wight scenery. Mr. Reuben Mitchell's views always possess picturesque qualities, and the "Threatening Storm" is especially fine. Mr. Henry Piper sends some very good work. Mr. Vaughan's views, somewhat peculiar in treatment and mounting, possess much merit. Mr. Sutcliffe and Mr. Branfill, of whose work we have already spoken, send in some good pictures for the competition. Mr. Sydney Smyth sends some fine instantaneous views which we recognize as old favourites. Of the prize pictures we have before spoken, and need not enter into detailed comment here.

Before concluding our notice this week of the exhibition, we may call attention to some very admirable photographs of spectra sent for exhibition by Mr. Norman Lockyer, F.R.S. It may interest our readers to know that the production of these photographs was chiefly the work of Mr. R. Friswell, the new secretary of the society, to whom we are indebted for the following descriptive note thereon.

"Commencing on the left hand portion of the spectrum of barium, near G, an example of the method of obtaining registers of the lengths of the metallic lines. The spectrum here represents a section of the light taken at right angles to the axis of the poles at a point about midway between them. We have here a demonstration of the observation first made with the eye on a less refrangible part of the spectrum, *i.e.*, that the ignited vapours lying between the poles consist of a dense core through which the principal discharge takes place, surrounded by numerous layers of vapour, becoming less and less dense as they recede from the axis of the discharge.

"In the core itself we have an approach to the effects obtained by Frankland in his celebrated researches on the cause of the illuminating power of flames, the gases being sufficiently dense to give, in many cases, a continuous spectrum. As the core is receded from, the gases become less dense, and the lines fewer in number. These lines, which are produced by the most tenuous vapours, are those which are reversed in the solar spectrum. In the next photograph we have the spectrum of the Lenart meteorite (in which Graham discovered occluded hydrogen) compared with the spectra of calcium and aluminium. The three photographs were taken in succession on the same plate, a sliding shutter with a square hole placed in front of the slit uncovering the portions of the plate in succession.

"The next example is the solar spectrum compared with the spectra of calcium and barium. The calcium exhibits, in the very thick line near the centre, a remarkable example of the power possessed by a very dense but comparatively cool gas, of reversing itself—*i.e.*, of absorbing the light given out by the hotter interior portions of itself. In this photograph the sliding shutter was also used. The coincidence of the dark solar lines with the bright lines of the metals is very distinctly rendered. The last photograph is one of the same nature as the first, the metal being iron. It is enlarged to a greater extent, and one half of the total length of lines only shown.

"All these have been enlarged from plates in which the actual available portion of the spectrum did not exceed two inches in length. On account of the enormous dispersion, the portion of the spectrum in focus at one time is very small. The focus was obtained by the removal of the focussing screen, and the use of a negative eye-piece in the first instance; the final adjustment being obtained by a laborious system of trial plates, as no other method was available in this highly refracted portion of the spectrum."



## TWO REASONS WHY PHOTOGRAPHS BECOME YELLOW.

OUR readers will remember that nearly two years ago, Dr. Gayer, in a paper read before the Photographic Society on the causes of fading in silver prints, insisted on the importance, as a condition of permanency, of fixing in the dark. In a recent issue of the *Photographische Correspondenz*, Herr Fritz Haugk, apparently unfamiliar with Dr. Gayer's paper, insists on a similar condition as the result of independent observation. He says:

"All photographers know very well that pictures toned in the open daylight always have a grey and dirty appearance afterwards. But it is not so generally known that in the fixing process a bright light is also to be avoided, and in proof of this I may mention a circumstance which has recently come under my experience.

"Some time ago I fixed, about the middle of the day, several dozen pictures, which were destined for my own album. During the operation I was called away for a few minutes, and during this time I left the pictures in the fixing trough in the yard, when the operation was completed, not in sunlight, however. All these pictures are now as yellow as lemons, while pictures which I had fixed days before and days after, for the same purpose, still retain their original whiteness. An accidental defect in the washing of these pictures cannot be the reason for the yellowness in question, as I always test most carefully the last washing water with Vogel's iodine preparation, and rinse three times after this.

"Another reason why pictures discolour rapidly is the following.

"I had prepared some pictures which were also intended for my album, and after mounting, put them on one side under pressure of some books. In this way they remained forgotten for about twenty-four hours. These pictures, I find, also show, all of them, a light yellow tint, while other pictures produced about the same time show no trace whatever of defect.

"From this it would appear, therefore, that photographs should be dried as soon as possible after mounting, for it is the keeping of them moist for a long time that is the cause of the yellowness in the specimens referred to."

## COMBINATION PRINTING.

BY GEORGE BRUCE.

AN easy system of combination printing is one of the things which must necessarily be of great interest to the photographic profession, for were the manipulations connected with this plan of making pictures made more easy, greater efforts would be directed to their production.

As one of those who do a little in the way of combination printing, I have read with considerable interest the answers given to the challenge made, through your advertising columns, by Mr. Tilley regarding his method of combination printing without the use of cut-masks. So far Mr. Tilley is master of the field, and very justly uses the right of a champion to throw down his glove in face of the whole fraternity, for a secret must always give the happy possessor of it a feeling of importance above his fellows, even though it should not add to the weight of his purse. There is a natural craving in men to know the unknown, and if there be a profession likely to intensify this craving more than another, it is that which we follow.

Here, then, we have a mystery—a secret—fitted to excite the curiosity of all who love and practise photography, which is well worth unfolding, if it be as valuable as Mr. Tilley proclaims it to be. That gentleman has given us a chance of "cracking the nut" and solving the mystery within a given time, with the understanding that should any one be fortunate enough to stumble on his method we shall save our money, while he will be minus the cost of his advertisements.

With these prefatory remarks, I beg to lay before your readers a method for making a perfect mask without the application of scissors, presuming that if it be not Mr. Tilley's plan, then, perhaps, it may be mine, as I do not remember having seen it described before.

Take your figure against a white background, or, if the negative be already made, with a dark background; then paint it out up to the edge of the figure all round. Take a very deeply printed impression from this negative, which, of course, will be all white paper except the figure. Without toning, fix this print. Then wash, and float for a minute or two on a solution of—

Chloride of sodium	...	...	5 drachms
Citric acid	...	...	4 grains
Distilled water	...	...	19 ounces

When the print is dry, it is ready for the next operation, which is very simple.

With a brush dipped in a strong solution of silver, paint over those parts of the figure that are white—such as face, hands, &c., or white parts of the dress—and expose it to the light till all is black; wash the print for a few minutes to free it from the salting solution, and, when dry, wax the print to make it transparent.

You have now a most perfect mask, covering the figure even to the hairs, the only drawback to its use being that the landscape background must be printed through the paper on which the mask is printed. *Papier vegetal* can be used instead of albumenized paper by salting and sensitizing in the ordinary way, and then printing the figure upon its surface in the way I have described.

This system of masking may be used for giving various artistic effects to the backgrounds of our pictures without showing any join. Paper negatives of landscapes, clouds, stippling for large vignette heads, &c., may be made in the same way, and applied with great effect in the production of artistic pictures.

## NEW METHOD OF PREPARING PHOTO-LITHOGRAPHIC TRANSFERS.

BY M. L. BORLINETTO.\*

I COVER a well cleaned plate with some oxgall, which may be preserved for a considerable period by admixture with creosote. By means of a bit of woollen cloth I rub lightly over the surface of the glass so as to cover the plate with gall as uniformly as possible, and to leave no kinds of lines. I dry by means of a mild heat, and while the plate is yet warm I put it on a levelling stand.

I next prepare a solution of gelatine, thus made up:—

Gelatine	...	...	5 grammes
Water	...	...	50 "
Alum	...	...	1 gramme

This is filtered thoroughly through a bit of flannel, as soon as the gelatine and alum are dissolved. While yet warm, I pour it upon the plate treated with oxgall. If the gelatine is rather troublesome in flowing, I help matters with a bit of cardboard. I then take a sheet of strong white paper, immerse it in a water bath, and, when thoroughly saturated, blot it on a sheet of filter paper. I then spread it upon the gelatine, taking care not to form any air-bubbles, or to let any of the gelatine get on the back; then everything is left to the morrow. If the weather be not too damp, the gelatinized paper will become detached of itself; but if this does not happen to be the case a penknife may be used for separating the paper at the margin. The surface of the sheet thus prepared is of a brilliant character, and it may be preserved for an indefinite period.

When I want to make use of it, it is plunged into a solution of bichromate of potash of three per cent. strength, and suspended to dry; it is then ready for print-



ing under a negative. As soon as the image appears in all its details it is plunged into a solution of—

Nitrate of silver	...	...	1 gramme
Alcohol	...	...	20 grammes
Water	...	...	50 "

The surface of the paper then becomes of a brick red, in consequence of the formation of chromate of silver. I wash in pure water, and then pour upon the image some liquid ammonia diluted with three volumes of water. Under this reaction the reddish tint disappears, for chromate of silver is soluble in ammonia, and there remains an image of a pale green, formed of oxide of chromium.

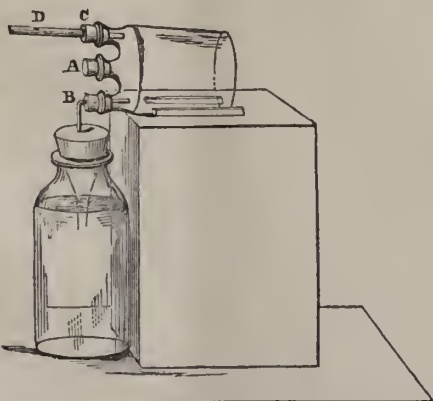
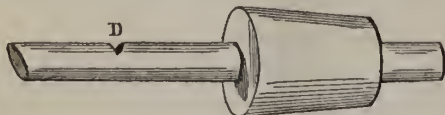
After this change I wash once more in water, and place the prints, face downwards, upon a board of hard wood (perfectly clean, of course), to which it is fastened by means of pins. This done, with a dry and very clean sponge the excess of humidity is removed from the surface, and then the print is inked with a lithographic roller.

The advantage of this process over all those with which I have hitherto experimented lies in the fact that the greasy ink attaches itself immediately to the print, even when it has been over-exposed; and that one has never reversed images to deal with, as is the case in other methods where the non-decomposed chromium salts have not been eliminated. The gelatine, by the addition of alum in the first solution, and its immersion into the bichromate of potash bath, becomes completely insoluble, and its consistence is augmented still further by the effect of the silver solution.

#### A TIDY FILTER FOR THE NITRATE BATH.

BY E. H. SPEIGHT.

On the top of a box about twelve inches high, place a three-necked Woulff's bottle. Nail two strips of wood on the box to prevent the bottle rolling off. Into neck B press a perforated cork and glass tube (tube to be bent at right angles). In neck C a perforated cork, with a piece of cane about three inches long through the perforation (see enlarged plan of cork and cane). Paint the end of cane outside the bottle at C with varnish, to stop up the pores. Make a



small cut at D. At neck A pour in the bath, and cork tightly. Arrange the bottles, box, and funnel as in diagram. Use double filter paper. The solution will now pass through tube B, faster or slower, according to the size of cut D. If cut D be found too large, paint it with starch or varnish, &c., then make a smaller cut in another place. Do not wet the cane with solution. My Woulff's bottle holds a pint.

### Correspondence.

#### WINSTANLEY'S METHOD OF REDUCING THE CAMERA EXPOSURE.

SIR,—The time-honoured custom of recording discoveries in the anagrammatical form—a custom which was adopted by Kepler and Huyghens in reference to the physical formation of the planet Saturn, has been again revived in a recent number of your excellent contemporary *Nature*.

With your permission I beg to place on record in this manner the secret and the theory of my method of reducing the camera exposure. The translation will be given after a reasonable lapse of time.

A, B C<sub>7</sub> D<sub>3</sub> E<sub>11</sub> F<sub>6</sub> G<sub>4</sub> H<sub>1</sub> I<sub>12</sub> L<sub>2</sub> M<sub>3</sub> N<sub>7</sub> O<sub>6</sub> P<sub>2</sub> Q R<sub>3</sub> S, T<sub>13</sub> U<sub>5</sub> V X Y<sub>5</sub>.

I am yours respectfully,  
October 17th, 1874.

D. WINSTANLEY.

#### SOUTH LONDON TECHNICAL MEETING.

DEAR SIR,—I see that this meeting is to come off next Wednesday evening, and I hope that, as the meeting is free, not only the members, but other photographers also, will contribute from the stores of their experience to make the meeting thoroughly useful. I intend to send something myself of a practical nature, which I have found of advantage in daily working. I hope others will do the same, for we must all help each other. Almost every man works out something that he feels is in advance on what is in general use, and such a meeting permits each to give and take. I am glad that the meeting, as I see by Mr. Cocking's letters, is to be confined to practical matters. It is not everybody who understands theory, but the details of practice we all know, and want to know more.

Some may show an improved dipper that will not permit the plate to slip off, a better kind of bath, a fresh mode of filtering, a new means of preserving sensitized paper, an improved cork or stopper, or a kind of developer. Speaking of this latter I see that some people have recently been recommending the omission of acetic or any acid in the developing solution. I should like to see some negatives so taken, as recently I have found the advantage of doubling the quantity of acetic acid that I formerly used.

If some of those gentlemen who have been successful in shortening the exposure in the camera by the preliminary exposure of the plate to light through opal or coloured glass, or in any other way, would show how they have done it, they will render a great service.

I see that short pithy papers are invited on practical subjects. It strikes me that such short concentrated articles as appear annually in the *YEAR-BOOK* are just the things required for this meeting. Nothing is so interesting as the results of actual practice, especially if confirmed by daily trial. Everybody is obliged to use those ingenious expedients that are disrespectfully called "dodges," and everybody knows their value, or they would not use them. Fresh examples are always occurring, and few things are more interesting to real practical men; therefore let no false shame stand in the way of exhibiting these examples of ingenuity.

One thing, in conclusion, let me impress on those who attend the meeting, but who have not contributed anything; that is, to be tolerant to those who have, and to remember in how much higher position those stand who do attempt to help and contribute, than do those who do nothing.—  
Yours, &c.,  
A MEMBER.

#### PHOTOGRAPHIC EXHIBITION FOR SCOTLAND.

SIR,—We have had no exhibition (photographic) in Scotland for a long time, and as the society has a considerable sum of money, I think some of it might be spent in



conveying the pictures now exhibiting in London to Edinburgh, if their proprietors will allow it, and have an exhibition there.

If this suggestion should be agreeable to the two societies, I have no doubt it would help to stir the photographic mind in Scotland, and gratify the eye of more than one.

Glasgow, October 19th.

OLD EXHIBITOR.

## Proceedings of Societies.

### MANCHESTER PHOTOGRAPHIC SOCIETY.

THE annual meeting of this Society was held at the Memorial Hall, on Thursday evening, the 8th instant, Mr. W. T. MABLEY, President, in the chair.

After the routine business had been disposed of, the Secretary read the

#### Annual Report.

YOUR Council, in presenting the nineteenth Annual Report, have to express their great satisfaction at the continued prosperity of the Society.

The proceedings of the past session have been more encouraging than for some years previously. The meetings have not only been more numerously attended, but also more instructively occupied.

It is very gratifying to your Council to be in a position to report a small increase in the number of members. There are seventy-six against seventy at this time last year. The average attendance at the meetings has been thirty-one and a-half against twenty-seven.

Several papers have been read, and other matters of interest have been contributed. For instance:—

Mr. Wade gave an illustration of carbon printing.

Mr. A. Brothers read a paper "On the Sciopticon for Enlarging."

Mr. Noton read a paper "On the Manufacture of Lime Cylinders."

Mr. Brothers exhibited a series of photo-lithographs of the "Triumphs of Maximilian." Mr. Brothers also communicated some particulars in reference to the fading of silver prints, and exhibited some examples of a very conclusive character.

Mr. Noton read an appendix to his former paper on Limes.

Mr. J. Brier read a paper "On the Production of Enlarged Landscape Negatives."

Mr. Frankland exhibited a number of photographic conveniences.

Mr. Noton exhibited a new form of lantern for the lime light.

Mr. Pollitt read a paper "On Enlarged Negatives by the Wet Process."

The session included two lantern exhibitions. An attempt to resuscitate the outdoor meetings hopelessly failed, and this once important and enjoyable part of the annual programme may be considered to have had its day.

Your Council are full of hope that the Society has yet a long and useful life before it, and they desire the active co-operation of each and every member to the end that all things may work harmoniously together; that the meetings may not only convey instruction, but give pleasure to the members; that minor difficulties may only precede major triumphs; and that peace and goodwill and mutual forbearance may crown all your efforts with well-merited success.

The annual report was accepted, and the Treasurer's accounts passed.

The election of officers for the year was then proceeded with, and resulted as follows:—*President*—Mr. W. T. Mabley. *Vice-Presidents*—Rev. Canon Beechey, M.A., Messrs. A. Brothers, F.R.A.S., T. Haywood, G. T. Lund, and M. Noton. *Council*—Messrs. Jno. Brier, Jun., W. G. Coote, W. Hooper, I. Wade, E. Woodward, J. Warburton, N. Wright, A. Patterson, J. Pollitt, and J. Frankland. *Treasurer*—Mr. J. H. Young. *Secretary*—Mr. Chas. Adin, Clifton Bank, Wellington Road, Whalley Range, Manchester.

Mr. ROBINSON (on behalf of Messrs. Vandyke and Brown, of Liverpool) presented three autotype mechanical prints to the society.

Mr. Brothers sent several very clever photo-chromolithographs for exhibition, the work of his friend, Mr. Griggs. These were much admired.

Mr. Coote contributed a specimen of his old enemy, marbled plates—this time by the wet process—and a print on paper that had been kept five and a-half months between sheets of blotting-paper saturated with a thirty-grain solution of carbonate of soda, and dried. The print was of fair average quality.

The Chairman read a letter from the Rev. Canon Beechey, M.A., referring to a "sub-leader" in the *British Journal*, and stating that he had sent the plates to the meeting for the inspection of the members. These plates were examined with much interest.

The thanks of the Society were accorded to Messrs. Vandyke and Brown, Mr. Brothers, and Canon Beechey, and the meeting was then adjourned.

## Talk in the Studio.

**SOUTH LONDON PHOTOGRAPHIC SOCIETY.**—The Annual Technical Exhibition of this Society will take place at its first meeting for the winter session on Thursday, October 29th, at seven o'clock, free admission being given to all interested. We are requested to state that the 29th (and not the 28th) is the day appointed for receiving objects for exhibition at the place of meeting, Cambridge Hall, Newman Street, Oxford Street.

**USEFUL CURTAINS.**—A good way to curtain a light, and the cheapest way considering its advantages, is by means of curtains of white muslin, from a yard to a yard and a-half wide, made to run on wires by attaching curtain rings, about six inches apart, to each side of the curtains, and, running the wires through them, stretching them taut. Put a stick the width of the curtain through a wide hem at each end. The curtains are perfectly manageable in this way, as they slide easily on the wires, and open from either end. They may be adjusted with cords properly attached, or, when lying horizontal or nearly so, by means of a long stick. A piece of bamboo cane, like those used for fishing rods, is the best, it being very light and strong. It is the method I am using in my new gallery. The spring rollers are neater, but I do not like them in practice as well.—*Philadelphia Photographer*.

**DURABLE SENSITIZED PAPER.**—(H. J. Newton).—"The preparation of a sensitized albumen paper as a commercial article has not been successful. It has been either too expensive to meet the popular demand, or deficient in keeping quality. There are several ways by which paper can be prepared so that it will keep indefinitely; but, as a rule, it is exceedingly difficult, if not impossible, to make a print on such paper that would not ruin the reputation of any photographer, especially after it is a week old. Some time since, in experimenting in this direction, I found that by floating the albumen paper, back down, for one or two minutes on a solution of hydrochloric acid (one ounce of acid to forty ounces of water), and drying, it would render it capable of keeping perfectly for ten or twelve days after sensitizing. Not only this, but the prints made on paper thus prepared were remarkably fine; and also, those made after ten days' keeping were equal to those printed immediately after sensitizing. Paper so prepared should not be fumed until required for use. After the paper has been removed from the acid solution and dried, it would be well to pack it away under a light pressure, placing the albumen surfaces together, so that when required for use it will be in proper condition to put upon the sensitizing bath. As it is a great convenience for photographers to be able to keep paper for several days after sensitizing without its deteriorating, I would suggest that some of our many manufacturers of albumen paper prepare some of it in this way, as I am sure that photographers would willingly pay the extra expense. In the toning of these prints I used a little tartrate of antimony, and it worked very well. In the first place, the prints turned red—a very deep, rich colour—and toned up from that. I have not experimented enough to give a reliable formula, but I would suggest half an ounce of tartrate of antimony, which is commercially known as tartar emetic, dissolved in sixteen ounces of water. For each grain of gold, use half-a-dozen drops of that solution, and increase it until you get the desired effect."

## To Correspondents.

**ENQUIRER.** The usual rule of admission of non-members to photographic meetings is introduction by a member; but all photographers are invited to attend the technical meeting of the South London Society, and will be admitted without payment on presenting their cards.



**FOG.**—It is a good rule to keep the bath and all the chemicals, and the temperature of the operating room as well, as near to 60° Fah. as possible; but it is not wise to warm the silver bath to a higher temperature than the other solutions. The loose surface fog, as we have before said, may arise from many causes; a bath containing organic matter, the use of impure acetic acid, or the use of a newly mixed iron developer, being amongst the most common causes.

**J. C. (Belfast).**—There is no substitute for enamelling card pictures which will produce any similar result. Varnishing has been attempted, but not successfully. The enamel paste to which you refer gives a very good result, and improves the picture, but the result is nothing like enamelling with gelatine and collodion. You may obtain the enamel or encaustic paste of Newman, of Soho Square. We cannot answer letters on photographic subjects by post.

**F. C. S.**—The chief defect in the prints you enclose is flatness, from the presence of too much diffused front light. The lighting is best in the portrait of a young lady in light dress, kneeling on a chair. A trace more intensity in the negatives, or a little better printing, would have made it a good picture.

**GEORGE.**—Our recommendation of pyroxyline made at a low temperature was for a specific purpose, the object being to make collodion for enamelling purposes. For negative collodion, we should not recommend such pyroxyline. It is very difficult to buy pyroxyline of uniform quality, and almost as difficult, without much experience, to make it of uniform quality. If you wish to make your own, you will enter upon a very interesting but very perplexing series of experiments, not without some risk. It would be quite impossible to give you full instructions in this column, as several pages would only give you an outline of the operations and the varying conditions and modes of dealing with them. You will find some useful details in all our YEAR-BOOKS except the last two or three, which you may usefully follow. You may obtain good cotton-wool for the purpose of most chemists. Coralline had only been employed experimentally, and each experimentalist has varied his proportions, trying various proportions to get various tints. Most London photographic chemists will be able to supply you.

**ROSE.**—Negatives which have become stained by standing unvarnished are somewhat difficult to deal with. You had better first run an edging of wax or black varnish round the edge to prevent the film leaving the glass when wet again. Then wet the film and supply a ten-grain solution of cyanide of potassium. This will probably remove the stains; but you must watch carefully, or it may also dissolve the image. When the stains are removed, wash well, dry, and varnish.

**S. L. D.**—The mottled, imperfect character of the prints you enclose is the result of using a weak, exhausted silver bath for exciting the paper, and probably very little of it in the dish. The strength of the printing bath should be kept up by adding silver or fresh strong solution from time to time; sufficient should be poured into the dish to fill it at least from half an inch to an inch deep, and it should be stirred or shaken up after exciting a few plates.

**R. B.**—You will find the promised details of the Lambert-type method in the present issue. It is, we understand, patented in this country, but the specification is not yet published.

**F. D. P.**—"White hard varnish" is a spirit varnish; diluted with an equal quantity of methylated spirit it is said to make a good negative varnish, presenting a tooth for pencil retouching.

**S. CUMBRAN.**—The chief defect of the card enclosed is the presence of too much evenly diffused light, so that the face is flat, lacking any definitely marked light and shadow.

**G. M. R.**—The brown discolouration in your toning bath will account for its refusing to tone, as a decomposition has undoubtedly taken place. It has probably been touched with fingers contaminated with some other chemical. Probably you have touched the hyposulphite fixing solution, and then touched the toning bath. You can only throw the solution amongst residues.

**D. T. L.**—The presumption is in favour of prints enamelled with gelatine and collodion being more permanent than those not so treated; but this is not absolutely certain, inasmuch as the cause of fading is often in some imperfection in the fixing operations, in which case the print carries the seeds of destruction within itself, and no protective measures will save it.

**THE CRAWSHAY COMPETITION.**—We have received, just previous to going to press, and too late for insertion in this number, another letter from Mr. B. J. Edwards, reiterating his statements of last week, affirming that he is prepared to prove that the erroneous announcement issued in the latter end of September was approved by Mr. Crawshaw, and asking that the award may be cancelled. As we have said before, a reference to any of the announcements issued by Mr. Crawshaw will show that Mr. Edwards is in error. But in any case, it is not a question for our discussion in these columns, as a charge of error against the jury, or a request for a reconsideration of their decisions, must be made to themselves, through their secretary, Mr. Pritchard, as it can scarcely be supposed that, in any case, they could take such steps in response to a letter in a journal.

**J. BRIER, JUN.**—The Secretary of the Bengal Photographic Society is J. H. Bennertz. We presume, if addressed as "Secretary of the Photographic Society at Calcutta," a letter would find him.

**V. HATCH.**—We will give the matter attention in our next. Several Correspondents in our next.

## METEOROLOGICAL REPORT FOR SEPTEMBER.

BY WILLIAM HENRY WATSON.

Observations taken at Braystones, near Whitehaven, 36 feet above sea level.

Date.	THERMOMETER.			BAROMETER.			Direction of Wind at 9 a.m.	
	Morning.	Noon.	Night.	Morning.	Noon.	Night.		
1	61°	61°	60°	29.20	29.37	29.61	S.	Heavy thunder storm this morning, with lightning. Showery all day.
2	60	61	59	29.6	29.68	29.75	E.S.E.	Rain a.m.
3	58	60	56	29.72	—	29.60	S.S.E.	Showers a.m. and p.m. Lightning at night.
4	54.3	58	56	29.68	29.72	29.83	S.W.	Fair, but gloomy.
5	56	57	56	29.80	29.80	29.72	W.S.W.	Showers p.m. Gloomy all day
6	57	61	58	29.79	29.80	29.78	W.S.W.	Fair, gloomy, and sultry.
7	60	61	58	29.81	29.81	29.78	S.	Showers noon. Gloomy all day
8	58	—	58.5	29.78	—	29.54	—	Rain from 11 p.m.
9	54	60	54	29.29	29.25	29.20	S.S.W.	Heavy rain this evening. Lightning 10 p.m.
10	56	58	54	29.20	29.24	29.35	W.	Very stormy. Rain a.m. & p.m., with strong wind.
11	56	56	57	29.40	29.35	29.21	W.S.W.	Rain from 11 a.m. till 9.30 p.m.
12	54	62	53	29.53	—	29.79	—	Heavy rain this morning. Sunny during the day.
13	53	57	47	30.02	30.09	30.14	E.	Fair and sunny.
14	54	61	58	30.01	30.07	29.97	S.	Fair and generally sunny.
15	59.8	60	57	29.80	29.80	29.88	S.S.W.	Rain about 1 p.m. to 4 p.m. Gloomy all day.
16	52	—	50.5	29.81	—	29.84	N.	Fair and sunny
17	53	58	56	29.79	29.76	29.54	N.W.	Rain morning and night.
18	53	—	55	29.67	—	29.80	N.W.	Showers a.m. Gloomy all day
19	56	58	58	29.79	29.75	29.71	S.W.	Drizzle a.m. and p.m., with strong wind.
20	58	60	57	29.66	29.64	29.58	W.S.W.	Fair, but gloomy.
21	58.3	66	58	29.50	29.37	29.37	S.	Rain a.m. and p.m. Very heavy from 3.30 till 7 p.m., with thunder & lightning.
22	57	64	58	29.58	29.30	29.50	S.	Very heavy rain, with strong wind, p.m.
23	56	59	49	29.80	29.84	29.88	S.S.W.	Fair, but gloomy.
24	56	60	50	29.93	—	30.00	—	Fair and sunny.
25	56	58	56	29.99	29.98	30.00	S.	Rain a.m. and p.m.
26	56	60	57.5	30.06	30.04	29.04	S.W.	Fair. Cloudy.
27	56	66	57	29.84	29.80	29.78	S.S.W.	Fair, but cloudy. Sultry.
28	60	62	58	29.53	29.44	29.34	S.	Rain a.m. and p.m.
29	54	53	—	29.38	29.28	—	S.W.	Showers, with strong wind, a.m. and p.m.
30	53	54	53	29.54	29.59	29.56	S.W.	Rain, with strong wind, a.m. and p.m.

From the above data I arrive at the following:—

	Mornings.	Noons.	Nights.
Maximum temperature	... 60°	... 66°	... 60°
Minimum ditto	... 52	... 53	... 47
Mean ditto	... 56.4	... 59.6	... 55.7
Mean of whole	... 57.2	...	...

N.B.—The temperature in direct sunlight on the 12th, 13th, 14th, 16th, and 24th was 113°, 110°, 100°, 110°, and 96° respectively; averaging 106°.

Number of days on which rain fell ... .. 20

Number of fair days ... .. 10

Number of fair days on which it was sunny ... .. 4

Number of fair days on which it was gloomy ... .. 6

**Brilliant Meteor.**—On the evening of the 13th September I noticed a very brilliant meteor—so much so that I could distinctly see it at a distance of a mile—shoot across the sky at about 8.57 p.m., from S.W. to N.N.W., at an elevation of 50 degrees.

**Curious Views as to the Size of the Moon.**—Until about two months ago I was unaware of any considerable difference as to the apparent size of this "nocturnal luminary." Since then I have enquired of several persons, and have found those who describe it:—A, about the size of a shilling piece; B, about the size of a "cart wheel;" and C, from 12 to 18 inches in diameter. Is not this fact curious?

Braystones, near Whitehaven, October 3rd.

## PHOTOGRAPHS REGISTERED.

Mr. J. PATRICK, Wemysfield,

Three Photographs of Thomas Carlyle.

Mr. TAPHOUSE, Barrow-in-Furness,

Photograph of the Duke of Devonshire.

Mr. BASHFORD, Portobello,

Photograph of Alisandro Gavazzi.

Photograph of Rev. J. R. McDougall.

Photo. group of Alisandro Gavazzi and Rev. J. R. McDougall.

Mr. MAYALL, Brighton,

Photograph of Thos. Hughes, M.P.



## The Photographic News, October 30, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### MINIATURE PAINTING AND PHOTOGRAPHY.—M. MERGET'S FURTHER EXPERIMENTS IN PHOTOGRAPHY.—AN IMPORTANT APPLICATION OF PHOTOGRAPHY OVERLOOKED.

*Miniature Painting and Photography.*—That poor Miss La Creevy and her art are to be heard of no more is, of course, due to photography; and it is well sometimes to remember, when one hears the camera and its productions held up to scorn by cynical painters, that, at any rate, bad as photographic portraits sometimes are, they are infinitely superior to the daubed miniatures of fifty years ago. We may laugh at carte-de-visite pictures, showing models in all sorts of impossible attitudes and situations, but, miserable as many of them are, they are far more like nature than were the productions of the ordinary miniature painter of days gone by. A young gentleman in a very vermilion uniform, flourishing a sabre; portraits of naval dress coats, with faces looking out of them, and telescopes attached; a literary character, with a high forehead, pen and ink, six books, and a curtain; a touching representation of a young lady reading a manuscript in an unfathomable forest; a charming whole length of a large-headed little boy sitting on a stool with his legs foreshortened to the size of salt spoons; and old ladies and gentlemen smirking at each other out of blue and brown skies: these are descriptions given by Dickens of miniatures in his time, and how like they were to nature we need not speculate. Miniature painting went out like a candle on the advent of Daguerreotype; but while the new art was an enormous boon to the public, it naturally enough ruined many a miniature painter. Sir William Ross appears to have been the last great painter of miniatures, and he, fortunately for himself, died just before the arch-enemy of his class made its appearance. His successor, Mr. Thorburn, seemed in a fair way to reap a fortune and reputation equal to his master, but photography put a sudden end to any hopes he had entertained in the matter. In the work just published of the life of Samuel Lover, we learn that this favourite author and ballad singer attempted to earn a livelihood at miniature painting, and came to London, indeed, for that purpose; but, fortunately for him, his friends dissuaded him from the idea. He was once commissioned to paint a miniature of the Princess Victoria, but, being unable to leave Ireland at the time, he missed this first step in life, which otherwise might have constituted him the greatest miniature painter of the day: in which case, as was wittily observed at the time, the office of "Miniature Painter to the Queen" would have fallen to a Lover instead of a Hayter. The best miniatures of the present day are without doubt our photographic enamels.

*M. Merget's Further Experiments in Photography.*—M. Merget, of Lyons, whose process of printing by mercury vapour created some stir two years ago, has been continuing his experiments in photography, and has lately published a new method of copying engravings or sketches on paper by printing through them. He says that moisture exercises a great influence upon the decomposition of salts sensitive to light, and this fact he employs in his copying process. He covers an engraving with a thin layer of a sensitive salt, and, slightly moistening the surface of the paper, a metallic film is formed that allows the paper to be seen through. If the layer of sensitive salt is allowed to dry, the salt is reduced in another way, and the metallic film adheres to the paper and appears very dark. By making use of this action he is enabled to copy engravings so as to produce all the fine and strong lines. M. Merget further holds that all cases of photo-chemical action are much influenced by the presence of some substance which acts as starter of the decomposition. He finds, too, that many substances, of themselves insensitive, are capable of

increasing sensitiveness in other bodies; thus oxide of zinc, if mixed with nitrate of silver, renders the latter exceedingly sensitive. Iodide of silver, as we know, is less sensitive than bromide and chloride, but, if mixed with nitrate of silver, the mixture is readily acted upon by light. This circumstance, M. Merget tells us, depends upon the decomposition of the nitrate by the iodide, and the subsequent reduction of the silver salts thus formed.

*An Important Application of Photography Overlooked.*—"Roman Imperial Profiles" is a work published by Messrs. Longmans, containing "a series of more than one hundred and sixty profiles enlarged from coins," arranged by Mr. G. E. Lee. One would have thought that this was a book of all others in which photography might be employed with peculiar advantages, for reproductions by means of the camera of profiles from genuine coins would be as valuable, almost, as the originals. Indeed, Mr. Lee's earlier work, "Roman Imperial Photographs," consisted of transcripts of this kind, and were, therefore, well worth studying by antiquarians and observers of character. The difference, in such a case as this, between pictures produced by photography and those sketched by a draughtsman is obvious, for the latter would be quite worthless as a truthful record beside photographs, even of the most imperfect character. Moreover, the employment of the camera prevents all kinds of tampering in the process of copying, and we see the imperfections just as well as the beauties of the work: and this, to a student or connoisseur, is of the greatest importance. In taking a photograph of an historical record, what should we say, for instance, if some of the features had been retouched and altered? And yet, in the work to which we have referred, the author frankly admits that he has made a most vital change, such as would be almost impossible in photography. He says, in regard to these sketched copies of the profiles, that "the only part of the face in which possibly some license has been taken is the eye. Though the earlier coins are, of course, in a higher style of art than the later ones, yet even in the earlier coins the eye seems to have been often imperfectly represented; and in the later mints it has been drawn quite inaccurately. In the eye, therefore, Mr. Croft has corrected their bad drawing, and this can hardly be called a departure from the original." We doubt very much whether Mr. Croft would be able to make a better job of it than the ancients; but in any case it would have been far better to show the original as it was, with all its imperfections, than to attempt to alter, and thereby modernize, the work.

### FRENCH CORRESPONDENCE.

WHEN working the wet collodion process, it not unfrequently happens that streaks and marble-like marks appear on the plate, upon the action of the sulphate of iron developer; these defects occur usually at the lower portion of the plate, where the silver solution has accumulated. They take all sorts of fantastic shapes, and appear brown by transmitted light, while viewed by reflected rays they have a silvery-grey aspect.

These marks can be easily removed with a soft brush under water, but the place they occupied has then no trace of the photographic image, and, consequently, the developer has produced an incomplete result. The marble marks are very prevalent when a silver bath is employed which has been used some time during hot weather. M. le Comte de Courten tells us a very simple way to prevent this kind of defect, which often renders clichés unserviceable which otherwise would be quite faultless.

On taking the plate out of the frame, after exposure, our ingenious correspondent leans it against the wall, collodion face outwards, resting it upon filter paper. He then takes a very clean sheet of the same paper (or, better still, of Berzelius paper), about five centimetres broad, and sufficiently long that he can apply it lightly to the lower



part of the collodionized plate to absorb the superfluous liquid. The paper is applied very gently and without any pressure or friction. The effect is most remarkable: the developer, which is used without stint, then exercises a most uniform action over the plate, and it flows equally over the whole of the latent image.

I spoke in one of my previous letters of the apparatus invented by M. Van Tenne for use with artificial light, not only for enlarging photographs by transmitted light, but also for amplifying opaque objects upon paper. Since then I have had an opportunity of personally experimenting with the Reflectoscope (for such is the name given to the apparatus), and I am now in a position to add a few interesting remarks to my previous communication.

I have said that the illuminating power may be furnished either by means of a magnesium light (Solomon's) or by an ordinary lamp, or, better still, by an oxyhydrogen apparatus. In the first case—that is to say, when a magnesium lamp is used—it behoves one to get rid of the inconvenience arising from the disengagement of fumes which become deposited on the condenser and upon the bright surface of the reflector in the form of a fine powder. This phenomenon, it may be guessed, militates very much against the reflection and transmission of the luminous rays. M. Van Tenne has succeeded in completely getting rid of the vapour by means of a current of air, which takes off the dense white smoke as soon as it is disengaged. In this way the pose may be reduced by some seconds, a most important consideration in face of the high cost of magnesium.

The oil lamp, with double current, produces a light almost white in character, and of a very powerful nature, which allows one to secure an enlargement within the space of a minute and a half. As to the oxygen gas, it may be easily introduced by means of an india-rubber tube, one end of which is attached to a reservoir and the other to a lamp furnished with a stopcock. I have said that the reflector is a spherical one. In this I was mistaken. Its form is an irregular ellipse, the curves of which are calculated in such a way that all the rays emitted by the source of light, and dispersed in every direction, are collected and directed in one path by the condenser, so that none of the rays are lost. It is in this way that the power of the apparatus is secured.

M. Van Tenne has even found a means of rendering more photogenic the light from an ordinary lamp fed by oil. He places before the condenser a blue glass, which stops all the yellow rays, and only allows those of an actinic nature to pass.

While discussing this subject, I must not forget the very curious experiments which M. Geynet has undertaken, and which ought to bring with them a mass of new revelations. Although I can scarcely enter at present into the details of experiments which have as yet scarcely begun, I may state that they confirm the theory expounded by M. Ducos du Hauron in the description of his heliographic method. By taking the three monochrome clichés which M. Ducos employs, and impressing by their means some sensitive collodion plates which are developed in the ordinary way, he obtains with the negative produced by means of the red glass a blue image; with the negative furnished by the green glass, a red print; and with the negative from the violet glass, a yellow print. In this manner, without changing in any way the method of operating, we obtain direct monochrome prints of different colours by the simple decomposition of light, and without having recourse to pigmented tissue.

M. Geynet, who is conducting his experiments with energy, proposes to give a demonstration at the first meeting of the French Photographic Society, on the 6th November next, and it is not unlikely that, by that time, he will have obtained several important results connected with this important subject.

In the face of the progress which has been made

recently in the matter of printing with fatty inks, and with the view of employing in the process the ordinary materials used by printers, one of our ablest mechanics, M. Poirier, has taken it into his head to construct a press which responds to all the wants generated by recent progress, and, I may add, he has completely succeeded in the matter. I have seen this press at work, and it seems to answer all purposes, for it may be used equally well for printing from blocks obtained by means of photography upon glass, upon lithographic stone, or upon metal; in other words, it serves for printing from Albert-type plates, as also from photo-lithographic and phototype plates, and for helio engraving. Its dimensions are such as to render it a most useful instrument. It can be worked with great facility, and its price is relatively very low. These are qualities which will ensure the invention every success.

The readers of the PHOTOGRAPHIC NEWS have, no doubt, not forgotten the name of M. Charles Nègre, nor the valuable heliographic work which that gentleman so successfully carried out. This artist was at once both a distinguished painter and a photographer of the first rank, and was one of the first to secure printing blocks upon steel by the sole action of light, and the beauty of these results, which he submitted to the public, contributed much to encourage him in continuing experiments in this direction. M. Nègre adopted first of all the process invented by Nicéphore Niépce, and modified by Niépce de Saint Victor; but he shortly afterwards perfected the process in the following manner:—

The steel plate was covered first of all with a varnish of bitumen of Judea, or with a film of gelatine and bichromate of potash, and then printed in the sun, not under a transparent positive, as was the case formerly, but under a reversed negative obtained direct in the camera. In this way the sensitive film was acted upon in those parts corresponding to the shadows of the image, and the steel plate, after removal of the soluble varnish, was uncovered in those parts corresponding to the high lights. The plate was then plunged in a gold bath and subjected to electric action. The plate became covered with an uniform coating of gold in all parts corresponding to the lights of the image, where the plate has been laid bare; whilst the portions corresponding to the shadows, and still covered by the varnish, were only covered with the gold in proportion as the light had acted upon them. The metal plate afterwards, when freed from all traces of varnish, had upon its surface a very adherent gold image, forming a perfect damascened image. The gold being proof against any attack by acid, it suffices to treat the surface with a dilute acid to etch the steel wherever it is not protected by the deposit of gold. In this way an engraved plate was formed presenting all the gradation of tints, from the purest whites to the most vigorous blacks.

For some time past we have heard nothing of M. Nègre, nor of his work; but one of our principal publishers has just issued a magnificent work by the late Due de Luynes, entitled, "A Voyage in Syria," illustrated by heliographic blocks executed by M. Nègre. The helio-engravings are produced from clichés collected by the noble traveller himself, and the result of the whole work is very successful. We are thus afforded proof of the circumstance that M. Nègre has not abandoned the good work on which he has been so long engaged, and we may now hope that he will prosecute his experiments with renewed activity.

ERNEST LACAN.

## THE PRESS AND THE EXHIBITION.

[It will be seen in our next extract that *The Standard* is less accurate than usual in more points than one, attributing in one case Woodburytype prints to the Autotype Company, and, whilst ignoring altogether the Crawshaw competition and



prizes, noticing some of the competing pictures as an integral part of the Photographic Exhibition.—ED.]

(From THE STANDARD.)

The Photographic Society of Great Britain have now on view at the Gallery of British Artists, Suffolk Street, Pall Mall, many examples of the skill of the more distinguished members of the profession. We may thus note the changes and improvements of the year made in the practice of an art which has become of interest more or less to every home.

Among the portraits, those by Julia M. Cameron would seem to take the highest place, because they best realize the style of the best painters, past and present. Take, for examples, the portraits now exhibited by this lady of "Little May Maurier," "Egeria," and "Little Rachel Guernev," taken direct from life. The light and shade call to mind the best pictures of the old schools. The portrait of "May Maurier" delights by its subtle low tones, which soothe the eye as much as some specimens in the same room distract by their abruptness and want of harmony. Julia M. Cameron's head of "Little Rachel Guernev" wears a peculiar lustre—the eyes are mirrors of light; while "Egeria" will claim attention for the nice care shown in the modelling of the face and neck. Whoever contemplates these portraits with care will view ordinary photographs only for the interest which they may have as likenesses of friends or of people of distinction.

Among the examples of landscape, we were attracted by the pleasant rendering, by Mr. J. Brier, of "Pont-y-Pair, Bettws-y-Coed." Here the boulders which enclose the quiet pool, and the dainty foliage which surrounds it, are exquisitely suggested. Photographers are never more happy than when rendering the charming effects of a shady avenue, like Mr. W. Nicholson's view of "Bonchurch Valley and Pond," in which the nicest gradations of shade are brought out with delicate truth. Photographers revel in ferns and flowers. Mr. J. Brier has met with a marvel of this kind at "Undermount, Bonchurch."

Architecture is rendered to perfection. Mr. Henry Piper has some views in which buildings are the chief features. His "Warkworth Castle," with river and woody slope, is fresh and bright as day; his "Guisboro' Abbey, Yorkshire," is expressed with a sharpness that would almost seem unreal; every stone that goes to make up the venerable pile looks as crisp as the chisel left it. The collection is rich in photographs of famous ruins. Mr. Peudryl Hall has a number from which it would be difficult to select one in preference to the others. The "Courtyard, Acton Burnell Castle," and "Conway Castle, from the Bettws-y-Coed," are, like "Building, Abbey, Nave, and Chapter-House," rendered with feeling.

Colonel H. Dixon exhibits a series of effective views in India, chiefly of famous temples and palaces.

Very much in contrast with the clear atmosphere of Colonel Dixon's Oriental scenes is Mr. Reuben Mitchell's little photograph called "Threatening Storm—On the Road," which is soft and humid to look upon as an April shower when white-edged clouds pass swiftly on their way.

Messrs. A. and J. Boal can deal with an entanglement of weeds, plants, and wild flowers, as witness their landscape entitled "A Shady Nook." For a first-rate true portrait of an old tree commend us to an example in the collection, an enlargement by Edwards's process from a negative by Mr. Henry Cooper. In this instance the lens has done its work in revealing the effects of storm and tempest, wrinkled age, and the havoc made by foolish visitors who from time to time have made incisions in the bark to inscribe their names.

There is a charming bit "On the Cherwell—Early Morning." Tall, graceful elms, which half conceal a Gothic tower, and a narrow stream well fringed with sedge. It is by Mr. J. Vaughan. Mr. J. Sutcliffe has specimens of soft, dreamy landscapes. One a calm lake scene with graceful trees, light as the birch, drooping over the water. Six views near Melton Mowbray, by Mr. C. A. Fernely, have the true, ripe, rustic tone so inviting to the wanderer. In the same feeling and kindred subject is Mr. F. Beasley's valley at Medenham, where the church lies half-buried by the near clump of trees.

Scattered about are many examples of the autotype process, by Messrs. Spencer, Sawyer, Bird, and Co. We were struck by the wonderful resemblance of nine of these autotype pictures shown in one frame. They are taken from Turner's *Liber Studiorum*. The selection would appear to have been made to show how the varied effects intended by the great original master may be perpetuated by the autotype process. We have morning, sunny and soft, stirring life on the ocean, village calm, and gloom

intense, where black clouds hang over a treeless moor. We need not enumerate the variety of good things which are exhibited by Messrs. Spencer, Sawyer, Bird, and Co. Under the heading "photography in the printing press" are landscapes and portraits alike successfully treated by their process.

Those who delight in portraits will find a variety of all sizes and proportions. The collection includes photographs of almost every known subject, far too numerous to name. An alphabetical list of exhibitors is appended to the catalogue, which will be of service. The society have done well to provide space for the influx of contributions which have poured in from all quarters, in addition to the contributions of former exhibitors.

(From the OBSERVER.)

The number and quality of the contributions sent in have justified this society in departing from their former rule, and holding their nineteenth annual exhibition a month earlier than usual, when the large galleries of the Society of British Artists in Suffolk Street are at their disposal. One of the main features of the present exhibition is the display of photographs in competition for the series of prizes given by Mr. Robert Crawshaw. These prizes are divided into two classes, one for portraiture on a large scale, the other for landscapes, and a separate room has been set apart for each. In both of them, the works which have gained prizes show the high state of perfection now attained in the art of photography. At the same time, we cannot but feel that the nearer is the approach made to imitative perfection, the more obvious and marked is the distinction between this art and that of painting in its nobler and more intellectual form. There is apt to be something almost painful in a large life-sized reproduction of human features; and we seem to lose the expression of a face, as we do that of a natural scene, while we are engaged in tracing the fidelity of transfer of every detail. The further we descend into particulars the more do we feel the want of that artistic spirit of order which marshals the facts of a subject, and so presents them to the mind of the spectator as to convey to him the same impression that the facts themselves have conveyed to the mind of the artist. But it would be a mistake to suppose that the photographer has not considerable scope for the exercise of artistic taste in the selection and arrangement of the objects he imitates, as well as in the manner of applying the resources of optics and chemistry at his disposal. The present exhibition is not without examples of this higher view of photographic art, but they are the exception, not the rule. In portraiture on a large scale, Mrs. Cameron employs the device of placing the sitter a little out of focus, so as to give an agreeable softness to the shadows, and convey the likeness in the light and shadow rather than in the surface of the skin. Without pushing this expedient so far, the winners of the Crawshaw prizes—namely, Messrs. Chaffin and Sons, Robinson and Cherrill, R. Crawshaw, and R. Slingsby—have nearly equally avoided hardness of effect. While their portraits are taken direct from life, Mr. C. Ferranti gains a fourth prize by the most successful enlargement of a head from a small photograph. Still, however, we prefer the smaller portraits, such, to select one example out of many, as Mr. R. Faulkner's delightful frame of children (69). The exquisite effects of landscape, by Messrs. Robinson and Cherrill, who take the first prize in that department, and are thus in the first rank in both classes, go further to outweigh what we have said about the limits of the art. Nothing can surpass the tender beauties of the luminous sky in "Repose" (276), while in all their works the composition is thoroughly artistic. There is less art in the large Welsh views of W. D. Sanderson, which are justly entitled to the second prize as photographs. The three French seaports (291 to 293), by Sydney Smyth; a Small Hancart (67), by F. M. Sutcliffe; "Summer Shade" (77), by H. Whitfield; and a frame of landscape studies (463), by H. B. Berkeley, are noticeable for picturesque quality. Of the last-named, and the portraits (121 to 127) by S. and E. White, the neat and effective framing is also worth notice. Specimens of enlargement of landscape, as well as portraits, and series of views in New Zealand, by D. L. Mundy; India, by Colonel H. Dixon; and the Asturias, by Messrs. M'Andrew and Stennings, are among the other attractions. The mechanical printing processes and enamels are also fairly represented. The conductors of the exhibition justly regret that there are but few instantaneous views and dry-plate subjects. These, indeed, are among the most valuable applications of photography. But we can scarcely share in their desire for more "composition pictures." They are apt to be but a weak kind of masquerading, such as Mrs. Cameron's "King Henry" (205), or a pumping of



sentiment, such as we see in the group (202) of sham fisher children playing at saying prayers for their father at sea.

(From the SOUTH LONDON PRESS)

Every one interested in photography—and who does not take an interest in this beautiful art?—should make a point of seeing the Photographic Society's Exhibition at the Gallery of British Artists, Suffolk Street. It is open for a very short season—only some three weeks—and this is to be regretted, since, as an exhibition, it is unique. Here may be seen the very best specimens of the art, each interesting in itself, while in combination they serve to show the progress made, and the perfection photography has attained to. A great part of the gallery is occupied with works sent in for the Crawshaw Competition—that is to say, for prizes, over £200 in amount, given by Mr. Robert Crawshaw, of Cyfartha Castle, Merthyr Tydvil, as an encouragement to experiments in special branches of the art. The first prize (£50) is taken by Messrs. Chaffin and Son, of Yeovil, for large heads, from life, and rather a curious incident may be noted respecting this. When the judges awarded this prize they telegraphed their decision to Yeovil. In the meanwhile young Mr. Chaffin had come to town, and, wholly unconscious of his good fortune, went to the conversation with which the gallery was opened on Tuesday night. His delight may be imagined when, on approaching the specimens he had sent in, there, hanging on the wall, he saw the principal one surmounted with the information—"Chaffin. First prize £50." The congratulations of his brother artists convinced him that the judges were not "chaffin'," in spite of their announcement; and Mr. Crawshaw, who arrived in town next day, added to his gratification by stating that he thoroughly endorsed the opinion of the judges as to the pictures deserving the prize. Bishop Colenso was, by the way, a visitor on the opening day, escorting Mrs. Crawshaw round the gallery.

## PHOTOGRAPHY FAMILIARLY EXPLAINED.

BY ALFRED H. ALLEN, F.C.S.\*

THE action of light on chemical compounds has been shown by careful investigations to be far more general than was formerly supposed, though comparatively few substances are acted on with sufficient rapidity to prove useful to us in photography. I am not aware that there is a single case in which the action of light causes combination; light is eminently a separative force, invariably (at least as far as we know at present) effecting decomposition.

It is true that a mixture of equal volumes of chlorine and hydrogen gases is powerfully affected by light, with production of the compound body hydrochloric acid; but we have very strong reasons for believing that the combination is only a secondary reaction, the first action of the light being to decompose the molecules of chloride of chlorine, and perhaps the hydride of hydrogen, the nascent elements then entering into combination with formation of chloride of hydrogen. That the molecules of chlorine do suffer decomposition by light is highly probable, from the fact that ordinary chlorine gas suffers a permanent change in bulk by exposure to light. The rapid combination of chlorine with hydrogen has been successfully used by Bunsen and Roscoe for determining the actinic power of daylight and various flames.

The actinic energy of a light—that is, its power of effecting chemical change, and, therefore, of being used in photography—is not always in proportion to its luminosity, and, therefore, the brightest day is not always the best for taking photographs. Of the gorgeous prismatic colours I now throw on the screen, the blue and violet have the greatest actinic power, and the dark ultra-violet space greater still; so that in the same way that we may have aerial vibrations occurring so rapidly as to produce no sound, so we have ethereal vibrations of such rapidity that they do not affect our eyes, though the sensitive collodion film can see them.

Among bodies sensitive to the action of light the com-

pounds of silver stand pre-eminent, and nearly all our ordinary photographs are taken through their agency. When I add a solution of common salt to this nitrate of silver, you observe the formation of a white curdy precipitate known as chloride of silver. When exposed to light this body gradually darkens with liberation of chlorine. If we soak paper in common salt solution, and, when dry, float it on a solution of nitrate of silver, a deposition of the chloride of silver takes the place in paper itself, and in presence of an excess of nitrate of silver and of the organic matter of which the paper is composed, the tendency to darken in the light is much increased. If albumen is also present the paper is still more sensitive, and in this form constitutes the ordinary sensitised paper on which our cartes are printed. If a fern-leaf or piece of lace be laid on such prepared paper, and the whole exposed to light, the unprotected portions of the paper are darkened, and a "negative" print is obtained, which may be rendered permanent by soaking the paper in some liquid which will dissolve the unacted-on chloride of silver without affecting the darkened portions. If we print from a negative picture (already obtained by another process), we get a "positive" impression on the paper, and it is by this method that our ordinary "cartes" are obtained. I am unable to use paper for my experiments this evening, as prolonged exposure to a good light is essential to success; but I will employ a far more delicate preparation—in fact, the same which is ordinarily used in the camera for taking negatives.

By adding nitrate of silver to this solution of iodide of potassium you see I obtain a cream-coloured precipitate of iodide of silver, and though light has but little action on this body when alone, in presence of excess of the nitrate it is exceedingly sensitive.

Instead of using paper I employ "collodion," made by dissolving a species of gun-cotton in a mixture of alcohol and ether, and when poured on this glass plate the liquid rapidly dries up, leaving a thin tough film impregnated with certain iodides which the collodion has held in solution. I next immerse it in this bath of nitrate of silver, when the cream-coloured iodide is produced in the collodion film, which also absorbs an excess of the nitrate.

I now extinguish all but the yellow light with which the table is illuminated, and remove the plate from the bath, when you observe that it is covered with the yellowish silver iodide. On the face of the collodion film I now place this negative portrait, and will act on the silver compounds by exposing it to the light of a short length of burning magnesium wire.

But first I will cover half the negative with red, and half with deep violet glass. After the burning of the magnesium, the print is taken, but you observe that the plate appears in no way changed; it requires to be acted on by some deoxidising agent, which causes a reduction of metallic silver in the portion exposed to action of light without affecting the parts which were protected by the opaque portions of the negative. On pouring an acid solution of ferrous sulphate on the plate, the picture gradually becomes developed, and after washing and "fixing" by dissolving the unacted-on silver compounds in cyanide of potassium, I place the plate in the lantern, and you see the image of it plainly projected on the screen. But the remarkable thing is, that the half which was covered with red glass has no picture on it, while the portion exposed under the violet glass is perfect in every detail. This curious fact deserves further study, so I produce the lime-light spectrum again, and place a second sensitised plate in the beam. On developing this you see that the action has occurred in the blue, violet, and ultra-violet region, the photograph gradually shading off towards the red end, where no change has occurred. This gives us the reason why photographers work by yellow light, for you see this yellow glass stops all the rays which we have found useful in taking a photograph. But we must not suppose that no actinic power is associated with the red end of the spectrum. On the contrary, chlorophyll is rapidly de-

\* *English Mechanic*. Abstract of a lecture delivered before the Hull Literary and Philosophical Society.



composed by red light, and bromide of silver is sensitive to all the rays of the spectrum. Naturally, a compound is most affected by the light of that colour (or refrangibility) which it most readily absorbs. Thus, chlorino absorbs the blue end of the spectrum (thus acquiring a greenish yellow colour), and consequently is most affected by the blue and violet rays. Iodide of silver has a yellowish colour for a similar reason. But chloropoyll largely absorbs the red rays, and consequently is affected by red light.

An extension of this principle in a novel and unexpected manner has lately rendered it possible to obtain photographs in the natural colours of the objects, and though the pictures are not remarkable for brilliancy or permanency, it is a step in the right direction, and foretells a more perfect success.

I should like to show the curious process of "development" in actual progress, so I will take a print on collodion by exposing a sensitive plate under this negative picture of your President to the action of this gas flame, and then immersing it in this diluted developer contained in a glass cell, I use it as a lantern slide, taking care to protect it from the action of the lime-light by the interposition of this yellow glass. There you see the picture gradually appearing on the screen, thus clearly showing the action of the developer on the exposed plate.

In the previous experiments I have merely printed on a sensitive collodion film through a negative picture, but of course the negative had first to be produced. On adjusting this lens at an appropriate distance from the screen, you see I obtain an inverted image of the gas flame. On exposing this collodion film at the focus of the lens I shall act on the silver compounds present, and after developing, &c., you see I have obtained a negative photograph of the flame. Any well illuminated object may be used, instead of an actual flame, but the exposure must be much longer.

Placing a sensitised plate in the dark slide of this camera, and illuminating this coloured print with magnesium light, I obtain a veritable negative photograph, which on placing in the lantern you see is an exact fac-simile of the original, except that the blacks and whites are reversed, and the blue and red tints have behaved almost like white and black respectively.

There is an extensive application now made of the fact that the bichromates are acted on by light with partial reduction to an oxide of chromium capable of forming an insoluble compound with gelatine. A glass plate is flooded with a solution of bichromate and gelatine, and exposed under a negative in the same way as sensitive paper.

On soaking the exposed plate in water, the unacted-on portion dissolves, thus leaving the exposed portions in relief, and after treatment with alum to cause hardening, the plates may be used for printing and various other purposes. Carbon (lampblack) or other inert pigments may be mixed with gelatine and bichromate, and then the film itself becomes a most perfect picture, and may be transferred from the glass to paper or other surfaces. In fact, the various applications of the gelatine process are capable of numerous modifications, according to special requirements, and of course the productions are quite independent of the action of light except in the first instance, so that while they have all the accuracy and detail of photographs, they have the advantage of allowing of almost unlimited reproduction, like other pictures produced by printing.

## Recent Patents.

### BURNISHING PHOTOGRAPHS.

BY HONORE MUHE.

THE following provisional specification of a patent for a burnishing process was abandoned:—

"This invention relates to an improved mode of and apparatus for polishing and glazing photographic proofs by submitting them to the action of a peculiar roller press and burnisher, which latter is heated by a lamp or otherwise during the

polishing process. This press consists of a roller the surface of which is just sufficiently roughened to insure the drawing in of the mounted photographic proof when presented thereto. Beneath this roller there is fitted an adjustable table, mounted on hinges at one end, whilst the other end is supported on powerful helical springs mounted on adjusting screws. This table is recessed immediately beneath the pressing roller, to receive any good burnisher—such, for example, as a strip of highly polished and hardened steel, glass, porcelain, or other like substance, capable of withstanding heat. On each end of the cylinder there is provided a slightly projecting shoulder or collar which rotates in contact with the surface of the burnisher at each end, and thereby prevents the photograph from being unduly pressed upon by the roller. On the axis of this roller there is mounted a winch handle for actuating the same. A lamp or other convenient means for heating the burnisher is situated immediately beneath the table. The surface of the table at the front part is ribbed with a view to facilitating the removal of the photograph therefrom on its leaving the burnisher. By subjecting the photograph (which is introduced face downwards) to combined pressure, and rubbing upon the surface of the heated burnisher, a brilliant glaze or polish will be imparted thereto."

### OBTAINING PHOTOGRAPHIC IMPRESSIONS ON COPPER PLATES FOR ENGRAVING.

BY HENRY BRADLEY.

THE following specification describes a mode of photographing on copper, so as to secure a satisfactory design to be followed by the graver:—

"In giving effect to my invention I will describe it as a quick and ready means for transmitting to a copper plate the view, object, or articles desired to be engraved on the same, and I effect this by a positive or negative application of photography. If the positive, I coat the plate by the agency of electricity with the thinnest possible deposit of silver, which deposit I afterwards oxidize by submerging the plate in a suitable acid, and on the front of the plate so silvered and oxidized I apply a coating of prepared wax, an essential feature of my invention, next a film of collodion, and when so prepared it is made sensitive with a solution of silver. The plate may then be placed in the camera for receiving and retaining through the medium of its lens the view, object, or other matter so produced, by which means a faithful representation of the matter to be engraved is transmitted to the plate. The plate is then taken from the camera, and undergoes a preparation of albumen and a coat of preservative, after which process it is ready for the operation of the engraver, who may proceed with his work with the thorough certainty that impressions printed from the finished plate will be faithful in outline and detail, thus saving the time of the skilled artist in working out the design and perspective effect for the engraver's guidance. Designs thus produced would be reversed by the process of printing, to avoid which, when desirable, I take a glass reversed negative, and then prepare my copper plate or other surface as follows:—I coat the copper plate in this case with a sensitive film prepared with wax, as in the positive process, and collodio-chloride of silver. The glass negative is then brought in contact with the so prepared surface with the aid of light, by which means a well developed and truthful positive is produced. It is then toned and fixed, and ready for the engraver to work on.

"I have described my invention for applying designs to be engraved on copper or metal plates; nevertheless, the same or modified process may be applied to surfaces for engraving of a non-metallic character.

"Though somewhat technical in my description, I have not thought it necessary to particularize the chemical compounds hereinbefore named in connection with the effectual realization of my invention, as skilled practitioners in the art of photography will well understand both the compounds and use of the preparations or chemicals named, and which invention simply consists in the application of photography in the manner herein described and set forth to the transmission and fixing on prepared surfaces, as herein named, pictorial, statuary, articles of vertu, manufacturers' designs, out-door views, or other matter, which may be enlarged or reduced, as desired, for subsequent engraving or etching, without the aid of artistic skill in drawing, or imparting to such surfaces the object or design to be engraved; and which I claim as of my invention, and desire to protect by these my in part recited letters patent."



# The Photographic News.

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## SECURING COPYRIGHT IN PHOTOGRAPHS.

NOTWITHSTANDING that a copyright law exists which should effectually protect the photographer against the unauthorized use of his work, we constantly receive communications from correspondents complaining of an especially irritating form of piracy to which they are subject, the more annoying because they rarely feel the matter of sufficient pecuniary importance to justify them in spending time and money in attempting to secure the legal remedy, which, although ostensibly available, sometimes eludes the grasp from some lack of experience in the mode of attempting to apply it. The kind of annoyance to which we refer at this moment does not consist in the production of photographic copies by a photographic pirate, and thereby injuring or destroying the sale of the original photograph. This is a commercial wrong, for which the photographer generally feels bound to seek a legal remedy, and, being a tangible wrong, it is rarely difficult to secure the remedy. But we refer to the practice of publishers of illustrated periodicals seizing the subjects which have cost the photographer much time and money to obtain, and engraving them not merely without permission or payment, but without the slightest acknowledgment or recognition of the source from whence the design is obtained, but often making some slight alteration to disguise them, serving them as Sheridan, in the "Critic," says "gipsies do stolen children, disfigure them, to make 'em pass for their own." The offence is in such cases as annoying as the remedy is doubtful, unless much experience and judgment are employed in putting the law in operation. In a recent note from Mr. England he pointed out two very barefaced copies of his Swiss views, copied without a word of acknowledgment, either of photography or the photographer, in a leading illustrated journal. This was by no means a solitary instance: parallel cases are frequently brought under our attention. As Mr. England remarks in his letter:—"The illustrated journals, whilst making use of photographs on every possible occasion, persistently try to ignore their indebtedness to the art."

We have more than once already called the attention of our readers to the formation of an association or company which aims to put an end to this especial evil, whilst conferring various other benefits. We learn from the *Illustration Company* that they have now completed arrangements for the establishment of a Central Registry of Copyright Photographs, where a complete record of copyright photographs will be kept, the company undertaking also to act as special agents in securing the due registration of such photographs at Stationers' Hall, and thus aiding photographers to secure protection. Our readers will remember that when the Fine Art Copyright

Act was passed a dozen years ago, our publisher undertook to enter photographs at Stationers' Hall for those photographers who could not undertake the duty personally, and has since continued to act for many of our readers. There cannot be a doubt, however, that photographers will find it advantageous to place themselves in relations with an agency devoted especially to such work, as well as to the negotiation between all parties interested in the sale or purchase of interest in the copyrights involved. It appears certain that an office undertaking to register, to record, and to negotiate such copyrights, and to secure, or advise in securing, a remedy in cases of infringement of copyright, meets an existing want, and must prove a boon to photographers.

## THE PHOTOGRAPHIC EXHIBITION.

### PORTRAITS AND STUDIES.

IN the present exhibition there are fewer subject pictures than we have seen in any similar exhibition for many years. There are no pictorial compositions, either in landscape or figure subjects, of important size or pretension, and comparatively few single figure studies which pass out of the domain of portraiture. Every year, however, portraiture, pure and simple, seems to take a higher pictorial character, and there is no lack in the present exhibition of fine examples of portraiture possessing high pictorial value: an important result, which may, no doubt, be largely attributed to the educating influence of the purely pictorial studies which the highest class of photographers have for years steadily produced.

Probably the most important pictorial "combination" at the present exhibition is No. 49, "The Spring," by Mr. A. Ford Smith, a clever composition, representing a couple of girls, with pitchers, at a spring in a bit of lovely country. The landscape portion of the work is very admirable: a bold foreground, good middle distance, and fine atmosphere effect on the mountains in the extreme distance. There is perhaps room for objection against the somewhat pronounced action of the figures, suggesting lack of ease and repose; but the picture is decidedly meritorious. The figure study by Herr Hugo Theile, of Dresden (52), has many charming qualities. A pretty little boy, quaintly dressed, rendered with singularly perfect photography, rich, delicate, brilliant, well-modelled, wins general admiration; but, as we have before said, it admirably illustrates a common photographic failing—the incapacity or indisposition to cut away any portion of a picture, not absolutely out of focus or stained, or in some way technically faulty. It is important in photography, as in literature, to learn "the last, the greatest art, the art to blot," or rather, let us say here, the art to curtail or limit. In this picture the part would undoubtedly have been greater than the whole: the cutting away of a few inches of unnecessary background would have made the portrait a picture. Mr. Rejlander is one of the few photographers who never err in this way. We sometimes desire that he would give us more, but we never have occasion to wish he had given us less. His frame of scraps (No. 6), containing studies of expression, contains almost material for a gallery in itself, if all the ideas were worked out. Three examples of portraiture (405-7) were also exceedingly fine. Mrs. Cameron contributes freely to the present exhibition, and many of her pictures have unquestionably charming qualities, despite technical shortcomings. No. 182, a portrait of Miss Isabella Bateman, illustrating the line, "Urania speaks with darkened brow," is a fine piece of pictorial work, admirably arranged; light, statuesque, drapery effectively rendered against the dark, leafy background. A study of the Magdalen (199) is very fine, as are also "Pray, God, bring father safely home" (a little child praying at its mother's knee), and "Kiss me, mamma" (204). King Harry the Eighth is a good portrait of a



well-known artist, but not so happy as a picture. An attempt to illustrate some well-known lines from Tennyson's magnificent "Maud," without being success, is scarcely failure. The lines are :—

"There has fallen a splendid tear  
From the passion-flower at the gate.  
She is coming, my love, my dear;  
She is coming, my life, my fate."

There is a pleasant suggestiveness about the figure and treatment which will charm many. No. 203, "Queen Henrietta Maria announcing to her children the coming fate of her father," is the least satisfactory of Mrs. Cameron's contributions: a poor tricky scene, from an unwholesome modern drama, poorly rendered. There are also several other of Mrs. Cameron's studies, some possessing very good qualities. Jabez and Alfred Hughes send some good portrait studies. No. 167, a collodion transfer enlargement, is a very charming picture of young maternity, and an equally charming portrait. The pictorial qualities are fine, and the tone and photographic qualities generally are richer and more vigorous than is usually attained in collodion transfers. No. 132, a copy of a study of a lion's head by the late Sir Edwin Landseer, is a singularly brilliant and forcible example of what may be effected in collodion transfer enlargements. There are several other frames of very fine portraiture, and a capital frame of odd dogs, illustrating the same method of printing. A number of yachts off Ryde by the same firm are very interesting. Mr. G. Bruce sends a very perfect study of a cottage interior, with a fine old woman sitting, bible in hand, contemplating the approach of the inevitable messenger. The old lady is "biding His time," and will evidently hail its arrival. The work is singularly fine in all respects. "Thinking of Home" is scarcely inferior in many qualities. Mr. Faulkner's frame of children probably contains more to repay lengthened study than any frame in the room. It is marvellously full of interest. All the charming children in London seem to sit to this gentleman, and to assume their most winsome aspects, and few probably could infuse so much art quality into pictures often taken under great disadvantages. A pretty expressive portrait of a little child, by Mr. W. Fox, entitled "Astonishment" (89\*), is very interesting, as is also (153) "Papa's little pet," by W. Gillard, a print rendered not the less effective from the "mezzotint" treatment it has received. Mr. Werge's figure studies are novel in conception, and highly skilful in treatment. Dealing with dangerous materials, nude models, he has escaped the possible danger which attends such an experiment. In "The Senses," five photographs of a little naked boy, skilfully posed and admirably photographed, cleverly illustrate by varied action the five senses. His other subjects each contain a thought well expressed. The Misses Davidson are very successful in a charming little lady, entitled "Our Alice," but less so in "Jane Shore." We have before referred to the excellence of the portrait studies of Mr. J. M. Young. In addition to the portraits, he sends a subject picture, entitled "For dear Life," representing a ship-wrecked sailor clinging to a rock to escape being washed away by the surging tide. The photography is excellent, and the pictorial composition good; but the attempt is just outside the capacity of photography, which does not readily lend itself to the expression of the powerful action and emotion involved in such a subject, and hence the manufacture of the picture is too apparent. "The Old Story," by Mr. A. Johnson, of Wick, is a very good picture of two lovers, the old story being told with the effective aids of moonlight and fine scenery.

With the exception of the pictures sent for the Crawshaw competition, and the grand examples of auto-type enlargement, there is not much large portraiture in the exhibition. Col. Stuart Wortley sends one very fine female head, equally fine as a picture and perfect as a

photograph. Mr. Slingsby also sends one life-size head which is singularly rich and effective, delicate without weakness, vigorous without coarseness, and marvellously full of modelling and solidity. Mr. Crawshaw also sends a very fine large head; but his two female heads, a little smaller, "Meditation" and "Lucy" are still finer. We have before referred to Mr. Blanchard's portraiture as leaving nothing to be desired. Besides his portraiture pure and simple, he has some examples of more essentially pictorial work, which are wonderfully effective. No. 226, a beautiful Italian face, treated in the manner of a well-known picture, and 241, a costume portrait, are well worth careful examination. The portraits of Mr. Abel Lewis stand also in the highest class, both in photographic and pictorial excellence, a singular refinement characterizing every example. We have also before referred to the excellence of the portraiture exhibited by three Brighton artists: M. Boucher, L. Bertin, and Lombardi and Co. The last mentioned, although very fine, occasionally trench on a somewhat hard mechanical effect from excess of retouching on the negative. Some very good examples of portraiture are exhibited by Messrs. Vandyke and Brown. Mr. W. Street, of Waterford, has some good work, as have Mr. A. W. Wilson, Messrs. Barry and Co., Mr. Barnes, Mr. Hooper, and others.

Perhaps there is no finer or more interesting picture, in many respects, in the whole display, than the "Dead Stag," sent by Captain Horatio Ross. The noble animal lies where he has fallen, apparently, when shot, in the midst of a grand highland landscape, his noble head and the foreshortened body admirably rendered. A "Group of Ptarmigan," by the same hand, is good, but less effective. A "Donkey and Foal," by Mr. T. Edge, is very admirable, true to nature, and a fine picture. Mr. A. Nicholls sends some capital portraits of "Toads." Mr. Wm. Fox sends a "Field Mouse," and Mr. Crawshaw the "Head of a Salmon," illustrating the deterioration of the fish when caught too late in the season.

Illustrations of special processes do not abound. Messrs. Spence, Sawyer, and Bird send most magnificent examples of enlargement, both in landscape and portraiture, many of them simply perfect, both technically and pictorially; and their examples of photo-mechanical printing leave scarcely anything to desire. Their carbon prints in every form are also admirable: besides the numerous fine prints on paper, some examples on panel and canvas illustrate how perfectly the process lends itself to any form of work the artist in oil may require; and a little frame of miniatures on ivory, coloured and uncoloured, from negatives by Hemmell and Kent, show how admirably carbon printing serves the purpose of the miniature painter. The Woodbury Printing Company send examples of photo-relievo printing, which are absolutely indistinguishable from silver prints. Three prettily-finished "cretaceous photos," by W. Hanson, are effective. Mr. Vanderweyde exhibits some exceedingly fine examples of his mode of finishing, possessing fine artistic qualities. Mr. Werge shows the value of his method of adding artistic effect to a portrait by means of the "powder process," in a couple of prints entitled "Before and After" (116). Ceramic photography is not extensively represented; but Mr. Faulkner exhibits a few fine examples, as does Mr. R. Keene, of Derby. Mr. Spiller exhibits some illustrative examples of the photography of a by-gone period, which will be examined with much interest. The examples of statuary exhibited by Mr. England admirably illustrate the force, without loss of delicacy, which can be secured even in white marble by skilful treatment in lighting and manipulation; and Mr. S. Thompson's work of a somewhat similar character, ancient sculpture in the British Museum, is excellent.

The carbon transparencies of charming subjects in portraiture exhibited by Mr. Faulkner are very fine; as are also the transparencies by the Woodbury process. Mr.



York's transparencies are also very excellent. A series exhibited by Mr. F. Howard are delicate, but a little grey and weak. Mr. Ferneley and the Misses Davidson also exhibit good transparencies. Mr. Werge exhibits Howard's convenient tent and kit, and a mountaineer's camera and stand. W. H. Oakley and Co. send a universal tripod stand, with some capital convenient adjustments.

### PHOTOGRAPHING THE TRANSIT OF VENUS.

WE have been favoured by Mr. Glaisher with a sight of the singularly precise and clear instructions printed by the Government of the United States for the observing parties commissioned with the duty of recording the progress of the Transit of Venus. The carefully considered photographic operations will be found full of valuable suggestions, as well as matter of great interest. We have not space to reproduce the minute instructions for the pre-arrangement and adjustment of all the photographic apparatus, and the especial care to secure beforehand, not merely perfect focus, but perfect accuracy and parallelism, between the plate and the lens, and truth in the adjustments generally. The whole of the operations will be conducted with military order and precision, and perfect discipline maintained in the ordering and carrying out the duties and marking the rank and position of the various members of the party. Here are the specific instructions for photographic operations after the apparatus and photographic facilities of various kinds have been placed in position:—

After the photographic instruments are in place, the whole party must, from time to time, be drilled in the photographic operations. In the expenditure of material, care must be taken to leave plenty for two hundred pictures on the date of the transit. In this drill, the operations must be conducted as hereafter directed in the case of the transit, all necessary particulars must be recorded in the regular book, and the plates must be properly marked; but enough of the preliminary pictures themselves must be removed from the glass plates to leave two hundred plates for use on December 8-9.

On the morning of the transit the break-circuit chronometer must be brought into the dark room; the time by that chronometer at which the first and fourth contacts occur must be carefully computed; and the chronograph-key must be brought to the dark room and connected with the chronograph on which the clock or break-circuit chronometer must be recording its beats. The exact position at which external contact occurs must be determined from the angles hereafter given, and the sun's rays must be cut off by a shade between the slide and the plate, so as to admit only a small portion of the disc in the neighbourhood of the point of contact. A strip of the sun's edge one inch long by half an inch into the interior of its disc will be ample.

Immediately before the computed time of contact, the slide will be drawn back, and a sensitive plate will be placed, not in the plate holder, but in some moveable support immediately in front of it, and in such a position that when exposure is made the uncovered part of the sun's image shall fall near one vertical edge of the plate. An exposure will then be made, as nearly as practicable, at the computed moment of first contact; the plate will then be moved one inch, and a second exposure will be made, and so on to as many exposures as the plate will admit of. The chronometer time of each exposure must be noted and recorded, and the time must also be marked on the chronograph. To effect this, the key must be so arranged that the observer shall press it and release the slide at the same moment; and if the apparatus can be fixed so as to close the key automatically by the slide, it will be yet better. Each exposure on any one plate must be lettered in regular order, *a, b, c, &c.*, and these letters must be marked in the journal opposite the corresponding chronometer times.

The object of this arrangement is to have as many photographs as possible of the indentation made by Venus on the sun's limb during the first five or ten minutes of the transit. Therefore, while one plate is being exposed in the manner described, another must be preparing, so as to continue the process with the least possible delay. The exposures must be made as rapidly as the operations can be conducted, and the times recorded with the proper care.

The regular photographs of the transit must then be commenced. In the division of the labour of this important operation it should be the exclusive business of one person to see that everything is working properly, especially that the chronograph and heliostat are running, and that the latter goes at the right rate, and is not allowed to run down. The remainder of the force must be devoted to the

taking of the pictures and the record of the following particulars in proper ruled forms:—

1. A number, to be distinctly marked on each negative.
2. The chronometer time of exposure.
3. The reading of the level on the plate holder.
4. The direction (east or west) of the small arm on top of the frame, from the centre of which the plumb-line is passed through the plate holder.
5. The temperature in the room at the time of exposure.
6. The direction of motion of the slide (east or west).

In taking the pictures, the slide must be moved alternately east and west, and the direction of the arm carrying the plumb-line must also be frequently changed.

In developing the picture, the sharpest and best defined edge must be sought for, without regard to the details of the solar surface; and the image must be as dark as possible to the very edge. To attain this end, the central portions must be a little over-exposed. If the image is found to shade off toward the edge in any considerable degree, the time of exposure must be increased, first by widening the slit, then, when this is fully open, by lessening the tension of the spring. If the exposure is still insufficient, the slide must be moved over by hand with as uniform a motion as possible.

### OUTLINE OF THE PHOTOGRAPHIC PROCESS TO BE FOLLOWED.

*Cleaning the Plates.*—All the glass plates—seven by seven—are to be roughened on the edges with a sandstone and washed free from the grit. They are then to be immersed in dilute nitric acid, and left to soak for a short time. After being washed under the stream of water from a tap, and rubbed with a clean piece of cloth at the same time, they are to be set up in the frames provided for draining. As soon as nearly dry, they are to be thoroughly dried with a chamois skin and placed in boxes.

*Albumenizing.*—The glass plates are next to be albumenized. If fresh eggs can be procured, they may be used, otherwise the dried albumen must be taken. In the first case the white of one egg is to be beaten up thoroughly and mixed with sixteen ounces of pure water and filtered; in the second case, one ounce of the dried albumen is to be dissolved in sixty ounces of pure water, and after the addition of five drops of nitric acid is to be filtered.

The dry glass plates are to be flowed with this solution, taking care that none runs on the back, and set in the draining frames to dry. The edge of a glass plate may be used to assist in procuring an even coating. The photographic house previous to this operation is to be sprinkled, swept, and dampened again. As soon as the plates are dry, they are to be put into the negative boxes again. These boxes should be kept clean and free from dust and dampness.

The albumenizing is to be performed, if practicable, the day before the transit, and two hundred plates must be prepared. The boxes containing the plates must be labelled 1, 2, 3, 4, 5, and set in regular order on a shelf near the nitrate bath shelf. The chief photographer must, the day before the transit, number the plates with a pencil diamond on the back or non-albumenized side, beginning with number 1 on the left-hand side of box number 1, which should be at the left-hand end of the shelf as the operator faces the shelf. The object in view is to have the exposures made on a series of plates with consecutive numbers, so that a record may be kept in the book provided for the purpose, and accordingly the second assistant, who is to coat the plates with collodion, must be directed to take them out in succession.

*Collodion.*—The collodion to be used by the various parties must all be compounded on the same formula, in order to assist in securing uniformity of results, and to allow of a uniform method of reading the negatives. The formula to be used is—

Pyroxyline...	...	...	...	80 grains
Iodide of cadmium	...	...	...	96 "
Bromide of cadmium	...	...	...	8 "
Alcohol	...	...	...	9 ounces
Ether	...	...	...	8 "

In order to make the collodion fit for use at an early date, a few drops of an alcoholic solution of iodine must be added, so as to communicate a reddish-yellow tint.

The chief photographer is to make only such changes in the above formula as are absolutely necessary to adapt the collodion to the temperature at his station.

The process of flowing and its details are left to the discretion of the chief, it being understood that the main object in view is to secure a film without thick and thin parts, and one which will give the sun of as uniform density as the nature of his light will permit. A well marked outline must be obtained, and the central parts will necessarily be over-exposed, so as to show but little detail.

Collodion in sufficient quantity to coat two hundred plates must be prepared and tested several days before the day of the transit; indeed, this must be one of the first duties attended to on arriving at the stations. The collodion must not only be allowed to settle thoroughly, but must also be passed through the filtering bottles provided, and then put away in stock bottles. On the day of the transit both the filtering bottles must be filled and kept in that condition. All the plates must be coated from them.



**Nitrate of Silver Bath.**—The nitrate baths are to be composed of forty grains of nitrate of silver to the ounce of water, and are to be acidified in the proportion of one drop of pure nitric acid to four ounces of bath; three baths will be in use at a time. It will be desirable to use the purest water attainable; and if rain water, which has fallen on a clean roof at the end of a storm, cannot be procured, a sufficient quantity must be distilled in the apparatus provided for the purpose. In either case it will be proper to add to the water a small quantity of nitrate of silver and a few drops of ammonia, and set the mixture in the sunshine for several hours. A supply of water sufficient to make at least six baths must be ready for December 8th. A few days previous to the transit six baths must be made up, and tried with plates which have not been albumenized. It must be recollected that albumen has a tendency to injure the nitrate bath and cause markings on the plates, and hence fresh but still well-tried baths must be ready for the transit day. Such baths as have been used with albumenized plates may be utilized by neutralizing them with a small quantity of carbonate of soda, and setting them in the sunshine. They may subsequently be filtered and acidified. The baths are not to be iodized; they may be tested with litmus paper before use, and must present a well marked acid reaction.

**Developer.**—The pictures are to be developed with a solution made according to the following formula:—

Sulphate of iron and ammonia...	... 1 ounce
Glacial acetic acid ... ..	... 2 drachms
Alcohol ... ..	... 1½ ounces
Water ... ..	... 16 "

The exposure given by the sliding cut-off shutter must be sufficient to enable the above developer to bring out the picture in thirty seconds; and if the pictures are too feeble, the slit must be opened instead of increasing the time of development. The chief must modify the above developer to suit the temperature of his station, and must aim to get a sharp outline to the sun, and not a picture full of shading and details. He must take care that the image of Venus is not fogged to any great extent.

**Fixing.**—The fixing is to be done with cyanide of potassium solution in the proportion of one ounce and a-half to a quart of water. The plates made about two times of the contacts may be fixed with hyposulphite of soda in an india-rubber dish, so that the photographers may give all their attention to obtaining as large a number of photographs as possible at those times.

It is expected that during the transit at least one hundred and fifty pictures will be taken; but the photographers are directed to finish each picture and fix it before putting it on a draining stand. The only exception to be allowed is in the case of the contact pictures.

**Varnishing.**—After the transit is over, and as soon as the plates are dry, they are to be varnished in the customary manner.

(To be continued.)

## COMBINATION PRINTING APPLIED TO GROUP PICTURES.

BY E. RIEWEL.\*

IRRESPECTIVE of the question of art, the value of a group depends, in great measure, upon having all the portraits of the persons sharply in focus. How difficult it is to secure such a picture every photographer knows from his own experience. How frequently does it not happen that a photographer is compelled, after taking innumerable plates of an unsatisfactory character, to go back, after all, to the very first he has secured, which is perhaps successful enough, except as regards one of the models, who has moved. It is either necessary to do this, however unpleasant it may be to the photographer, or he must remain unrewarded for his trouble. The blurred image is retouched as well as possible, a task which, besides being unsatisfactory so far as the likeness is concerned, is, moreover, somewhat troublesome and costly. Another plan is to take the model that has moved over again, with a face of precisely the same dimensions, cutting out a proof on paper with a sharp and pointed knife; this excision is mounted carefully in its place upon a copy of the group, and the latter print, in a half moist state, is then put under a powerful rolling machine, the patch being afterwards retouched as well as possible. But such pictures as these do not appear successful unless they are covered with glass. A third method consists equally of taking the one who has moved a second time, separately, and stopping out the

negative except where the face of the sitter is seen. The group negative has a black patch where the face of the unruly sitter appears, and when a print has been secured with this negative the other one is put into the frame, and the face that is wanting is printed in. The manipulation of the negatives in this case requires some skill, for in the first place the spot must be accurately determined where the negatives overlap; and, secondly, the time of printing the face must be accurately estimated, for one cannot very well open the frame during the operation. This process has its disadvantages, for in winter time it is difficult sometimes to get the picture printed in a day.

Some little while ago I had occasion to take a group of a mother with three little children. In my first result it happened, as is often the case, that the oldest child was restless, while in the second picture it was the youngest that had moved. A third picture was altogether useless, because one of the children began to cry, and with this there was an end to any further attempt. There was no time for another appointment, for the picture was required for a certain occasion, and intended as a surprise. My desire to please, on the one hand, and not to be at all my trouble for nothing, on the other, caused me to examine the plates once more before destroying them, and I could not help thinking what a pity it was that the head in second plate did not happen to be in the first one. I resolved to see whether it was not possible to cut the head that had been well rendered out of the group, and transfer it to the latter plate, in which everything was satisfactory but the particular face. As a matter of precaution I first tried on the negative which had not succeeded so well. The experiment was successful; upon which I tried the other, and succeeded again to the best of my expectations. My simple plan of operating I will describe.

To protect the negative from injury—which, in the case of varnished negatives, is of course no longer necessary—I pour over the negative, after fixing and washing, a solution of gum in ten parts of water. When the film has dried, I take a graving needle and trace a line with it round the outline of the head, cut out carefully the bluntly defined spot with a knife, and coat the clear glass surface with a little gum solution. After I have drawn in like manner a line round the other head with the graving needle, I make a wedge-like incision from the head towards the edge of the plate, and endeavour, by means of a thin stream of water, to lift this portion of the collodion film, so that it leaves and swims off the film. Care must of course be taken that the head also does not slip away. When the head likewise begins to detach itself, I lay upon it a bit of wet filter paper, and commence to pull the film until I get it to the margin of the plate, when the latter is turned over, and I take the film and paper away. The film is now carefully laid upon the first negative, where the patch of clear glass is, some care being necessary to prevent the formation of air-bubbles; the film is pressed down by means of the filter paper, or smooth writing paper moistened with a little saliva. Any folds or creases in the film are removed with the aid of a moist camel-hair brush. Finally, the negative is varnished in the ordinary way, and the fissures in the film well retouched.

As the film of freshly prepared or intensified negatives with pyrogallie attaches itself more tightly to the glass than those treated with iron, it is necessary sometimes to moisten the plates first of all in acidified water, and then to employ a wash bottle. In transferring a large surface of collodion, I apply albumen, and find that the film then attaches itself very perfectly and uniformly. Albumen beaten to a snow, and then mixed with five-and-twenty times its volume of water, is applicable.

Some care and skill are of course necessary in the manipulations to which I have referred, if a successful result is required; and here, as in everything else, "practice makes perfect."

\**Photographisches Archiv.*



## Correspondence.

## COMBINATION PRINTING.

DEAR SIR,—In looking over some back numbers of the *News* to day, I find that had I read that of August 21st as carefully as I am in the habit of doing, my letter in your paper this week would not have been written, and your valuable space could have been filled with more original matter.

Mr. Bovey's letter of that date, which I must have missed, contains, as your readers will see, the method of masking spoken of in my printed letter, and consequently I find myself in the position of having to apologise to that gentleman for appearing to claim his ideas on the subject of masking, with the additional mortification of feeling that Mr. Tilley still holds his secret.—I am, dear sir, respectfully,

Dunse, N.B., 23rd October.

GEORGE BRUCE.

## ON THE EXTORTIONATE PRICES CHARGED FOR NOVELTIES.

DEAR SIR,—It is, I believe, an Englishman's privilege to grumble, so I offer that as an excuse for thus troubling you. It is not of business I am about to grumble, nor is it the price of chemicals, paper, &c., all of which are cheap enough; but I must enter a protest against the extortionate prices we are charged for any new thing. For instance, not long since I purchased a background, price £4 10s. Now I feel certain, on close examination of the article, that it could not have cost in its manufacture more than 30s. Then, again, recently I bought a cabinet size machine, price £5 (as uncertain in its operations as it is faulty in construction), which was made, I imagine, for about 10s or 15s.

Now, sir, there is profit! And this to be made out of us, who, I venture to say, labour against the keenest competition possible in a business. Whom the cap fits, let them put it on, as I, in conjunction, I am sure, with my brother photos., would like to see a few words in justification of charging such "fancy" prices. I enclose my card, and remain, dear sir, yours truly,

TAKEN IN.

Plymouth, October 26th.

## THE LAMBERT-TYPE PATENT.

DEAR SIR,—I was surprised and somewhat amused to see, under the above heading, a description of a method of finishing enlarged negatives which I have not only practised, but have given to the profession in my paper (read before the South London Photographic Society) upon enlargements v. direct large pictures. You say, in your leader, that Mons. Lambert claims as a distinct novelty the use of transparent paper upon both sides of a simply developed negative, and the working with pencils, or any other materials, upon both papers. It was exactly this point that I called attention to in the concluding part of my paper, and I exhibited a life-size head done in that way, which you were good enough to say was simply perfect. I was surprised that, in the discussion which followed, no one seemed to think this method of any importance, and so I let the matter drop, with the remark to a friend that if it had been patented, or sold as a secret process, it would have been appreciated.

I thought enough of it to continue its use, and work it out in my every-day practice; and the new mezzotint picture I have introduced is obtained by this method. The fact of its having been patented in this country, and your description of the results now exhibiting, may, perhaps, call photographers' attention to what is an easy and artistic method of finishing enlarged negatives; and although little, if any, attention was paid to it at the time I published it, photographers may congratulate themselves upon that publication, as that removes at once the patent restriction.

Yours truly,

G. CROUGHTON.

[Mr. Croughton has, we think, slightly misunderstood our remarks. We have repeatedly spoken highly both of the method of producing enlargement which he published, and of the results. We do not now enter into comparisons of the relative advantages of the various methods, but there is a distinction, we think, between his method and that of M. Lambert. Mr. Croughton's special claim was, if we remember rightly, the production of an enlarged transparency, and producing the chief amelioration required upon it. From this he produced a still further enlarged negative, which might be again retouched if desired. In some cases he supplemented the enlarged negative with tracing paper, pointing out its special advantages for touching upon and softening the texture of strongly marked faces. The point of specific novelty which we indicated in M. Lambert's system was not the supplementary use of tracing paper, which we distinctly said had been used before; but the use of an image with no printing quality whatever, and—we quote our own words—"the systematic reliance on this method of treatment (the use of retouched paper) for all intensification and finish."—ED.]

## WEST RIDING OF YORKSHIRE PHOTOGRAPHIC SOCIETY.

SIR,—During the past summer several photographers have expressed a wish that a photographic society should be established in one of the large towns of Yorkshire, and, indeed, judging from the number that have signified their intention of joining, I presume one can be started enrolling not less than twenty-five members to begin with. Leeds, Bradford, and Halifax present a very creditable front in nearly everything connected with photography; and as Bradford is the centre, taking in these two towns within a radius of eight miles, besides innumerable other towns and villages that support quite an army of prosperous and clever photographers, why not resolve to have a start this next month, making that town the seat of photographic government for the West Riding?

I shall endeavour, with a few of my amateur and professional photographic friends, to galvanise the "Yorkshire West Riding Photographic Society" into existence by the middle or end of next month. I have already elected myself enrolling officer for Halifax, and shall be glad to hear from anyone willing to co-operate with me in Leeds, Bradford, and other places, or to be informed of the names and addresses of gentlemen desirous of becoming members.

I can speak of the enjoyable evenings profitably spent at the meetings of such societies, and cannot imagine an enthusiast in the art who would grudge a walk of half a dozen miles to attend the monthly meetings of one of them.—I am, yours, &c.,

J. W. GOUON.

Akroyden, Halifax, October 26th.

## Notes and Queries.

## IMAGE BEFORE DEVELOPING.

MY DEAR SIR,—I had not time to send you a line for insertion last week on the above subject, and the non-success of your correspondent "B. D.," related in your impression of October 16th. I have found in my experience as a dry-plate worker, that always, more or less, there is a visible image prior to developing plates organised with tannin, gallic acid, pyrogallie acid, ale, and morphia acetate, by reflected light—morphia especially; but I do not look upon it as a bad omen—quite the reverse. It is not to be seen so much in a plate that has been under-exposed, unless it has been left several hours before developing; then, only the sky is visible as a slight browning of the film by reflected light; the more the plate has been exposed, so in proportion, does the browning cover the plate. In the



appearance of an over-exposed plate, scarce any of the shadows are visible, and those that are, are slightly tinged with the brown hue similar to a print from a fogged negative. I prefer to see the image before developing, it being in my estimation the keynote to success, in proportion as the image is more or less visible; so do I understand how to modify the developer to ensure success.

In the fogging of a dry plate from over-exposure, and a wet one from the same cause, the behaviour of the former seems very different to the latter. The former, in some instances, seems to fog without showing an image, or very slightly; and the latter, one sees flash out and is gone as the developer covers the plate, and I think that is why many seem to be at a loss when attempting to develop a dry plate, however good they may be with the wet plate. My advice is, to novices with dry plates: do not attempt to go out with them until you are able to take a good negative at home with the plates you intend working. Thoroughly test them in this manner:—Expose one plate in the camera for a few seconds only (intentionally under-expose), and try to develop it; only the sky will appear, with the strongest high lights. Do not force development too much. Fix in the usual way, either with hypo or cyanide. The plate ought to come out perfectly bright, except where reduction has taken place (sky and high lights); if the plates are right, the rest will be bare glass. Expose a second plate, but this time with the intention to over-expose. Develop, and note the difference between the two plates. Reduction, in the latter case, has taken place over the whole surface of the plate, with scarce any appearance of an image. But if the first under-exposed plate is bright, it is a sure sign that the plates are all right, and success entirely depends on the skill of the operator, and not on the plates, whether prepared with emulsion or bath.

I think "B. D.'s" failure is from over-exposure. I have tried slow plates and rapid ones, but never found an ordinary plate that would allow sixteen seconds' exposure under a negative in a printing frame in the month of August; two seconds, or even less, would, I should think, be ample, and about five or six in the dull weather of December. I think if "B. D." tries again with short exposure he will be more successful. He must bear in mind that exposing under a negative is far different from the exposure in a camera, on account of the absorption of light by the lens, and its focal length must also be taken into consideration; whereas when a negative is employed in contact with the plate the amount of absorption is very small when compared with a lens at a distance in the front of the plate.

It is a great pity the Dry Plate Club was allowed to die out, where one could exchange valuable ideas with others personally working in the same direction.—I am, dear sir, yours very truly,

WILLIAM BROOKS.

9, Stratford Green, E., October 26th.

### REDUCING EXPOSURE.

SIR,—Photographers are promised "after a reasonable lapse of time" full details of Mr. Winstanley's method of reducing exposure in the camera. Those who are skilled in cryptography may possibly read the secret of the mystic letters and numbers before Mr. Winstanley gives the solution of his riddle. In the meantime I think it would be very interesting if your experimental correspondents who have worked in the direction of shortening exposure would state specific results. It was stated twelve months ago that Col. Stuart Wortley was making some successful experiments with the application of a reducing agent to the sensitive plate before exposure, so that the action of light and that of the reducing agent should go on together, *pari passu*. Has any detailed account of these experiments appeared? You have published from time to time promising accounts of the supplementary use of diffused light, and Mr. Samuel Fry some time ago gave most interesting details of his experience with the plan of using opal glass which you had just published. Have portraitists generally adopted this plan which was so highly avouched? Does Mr.

Fry continue its use constantly, or have drawbacks in its utility been found? I ask these questions in the interest of many of your readers, who, residing in country districts, have not opportunity of hearing the interesting but necessarily unreported photographic gossip of metropolitan life.

Q.

### IMAGE BEFORE DEVELOPING, ETC.

SIR,—Probably the real reason that "B. D." found the plates to fog in developing was that "Allsop" does not contain sufficient of the saccharine and extractive matter necessary to make the developer mucilaginous, these materials acting as restrainers, very much as bromide of potassium does in alkaline developing—indeed, quite superseding the necessity for it. The exposure for a transparency was at least eight times too long.

Depend upon it, "D. B.," that there is much more to learn in the developing of a dry plate than in the preparation of it. The visibility of the image may be due to 1st, a chloride being in the collodion; 2nd, over-exposure and the organic preservative—or both combined—but in every case over-exposure is indicated.

W. H. DAVIES.

### Talk in the Studio.

MR. YORK'S TRANSPARENCIES.—We have been favoured by Mr. York with a copy of his new catalogue of transparencies for the lantern, containing his most recent additions to an already wonderfully complete collection, the novelties extending to subjects of interest as recent as the scenes of the gunpowder explosion at Regent's Park. The quality of these slides, we have before had occasion to describe as admirable, possessing the fine rich permanent black obtained by platinum toning. As Mr. York will send a specimen slide and catalogue for one shilling and sixpence, we strongly recommend all our readers interested in the lantern and lantern exhibitions to avail themselves of such a chance. The catalogue is the most surprisingly extensive and complete list of interesting subjects for the screen ever produced.

SCIENCE AT HOME.—Mr. Woodbury has just issued, in pamphlet form, some interesting articles he contributed to the *English Mechanic*, devoted chiefly to the exposition of a number of ingenious and clever lantern experiments, by which very charming and instructive effects may be produced. The book will be prized by all interested in the lantern.

PANORAMIC LANTERN SLIDE HOLDER.—Mr. Vincent Hatch sends us a copy of the provisional specification of a magic lantern slide holder for giving panoramic effects, which he thinks may interest photographers as the winter approaches. It runs as follows:—"The invention relates to improvements in magic lantern slideholders, whereby the slides are caused to travel in a continuous series slowly in succession past the opening opposite the lamp or other light employed for exhibiting the object or image depicted upon the slides, thus producing panoramic effects. The slideholder is so arranged and constructed that the top and bottom edges of the slides are retained in grooves or guides formed upon the holder, the slides resting in a vertical position upon and being carried by an endless band mounted on rollers attached to the slideholder or otherwise. The slides are introduced between the guides in succession, so as to be supported vertically end to end upon the endless band, to which motion is given by a crank handle upon the axis of one of the rollers or otherwise, by which means they are caused to travel slowly whilst the image or object thereon is exhibited in like manner to a panorama, as is well understood, or each successive slide may be kept stationary for a time at the will of the exhibitor. In the place of employing an endless band for carrying the slides they may be supported upon and carried by other forms of carriers in accordance with my improvements, such as a tape of worn fabric, leather, or other material wound to and fro upon rollers or other slides may be mounted upon carriers actuated by a rack-and-pinion or otherwise."

ACCORDING to the *Belgique Horticole*, Dr. Candèze has invented a small photographic apparatus, which he calls a "scenograph," which consists simply of a stick and of a camera the size of an opera glass. To photograph a plant or other



object, it is sufficient to place it in the focus of the scenograph for a minute or two. The negatives [plates?], it appears, can be purchased ready prepared.

**WATERPROOF PAPER.**—The *Journal of the Franklin Institute* says that by plunging a sheet of paper into an ammoniacal solution of copper for an instant, then passing it between cylinders and drying it, it is rendered entirely impermeable to water, and may be even boiled in water without disintegrating. Sheets so prepared, if rolled together, become permanently adherent, and acquire the strength of wood.

**ENGRAVING ON COPPER.**—M. De la Grys reports a new process in the above named art, which consists in first covering the plate with a thin coating of adherent silver, which is, in turn, covered with coloured varnish. The lines are then drawn with a sharp point, after the fashion of using a diamond for stone engraving, and subsequently sunk into the plate by means of the action of perchloride of iron. A carbon print transferred to such a surface would render the engraving easy and the result accurate.

**PRODUCTION UPON WOOD OF PHOTOGRAPHIC PROOFS DESTINED FOR ENGRAVING.**—M. T. C. Rebo, in *Les Mondes*, describes a method. "The block of wood is first covered with a layer of gelatine (0.39 grammes to 31 grammes of water) by means of a soft brush. When this coating is dry it is covered, in the dark, with a solution prepared of:—1. Red prussiate of potash, 7.80 grammes; water, 62.20 grammes. 2. Ammonio-citrate of iron, 9.10 grammes in 62.20 grms. of water. These solutions are mixed and filtered, and the mixture is kept in the dark. When the layer is dry, it is exposed under a negative for ten to twelve minutes, and washed with a soft sponge, when a blue image appears. If thus prepared, the coating does not shell off under the graver."

## To Correspondents.

**PYROXYLINE.**—If you have, as you state, made pyroxyline for several years without meeting with such mishap as you describe, your experience has been very fortunate, as it is generally one of the earliest troubles of the experimentalist in this direction. The ebullition of the acids, accompanied by sudden evolution of red fumes, and complete solution of the cotton, is by no means uncommon, and may proceed from various causes. The proximate cause is generally excess of water in the mixture. The result may be brought about in various ways. Assuming that you commence with acids of the proper strength, and at the right temperature, the trouble may arise from placing too much cotton in the mixture. Having placed in the right quantity, you probably place in a tuft or two more, immediately upon which the ebullition commences. Or you may have failed to open the tufts of cotton sufficiently on placing them in the acid—a cause which will bring about a similar result. Or you may have failed to keep the cotton well stirred by means of the glass spatula, which will bring about a similar issue. The remedy to be applied on the first symptom is active, or even violent, stirring of the mixture, and the immediate addition of fresh nitric acid. The natural action on the generation of the red fumes (which are highly dangerous to health) is to rush out of the room, leave the mixture to its fate, in which case the whole of the batch is lost, as in your case. If you have energy and fortitude enough to take the steps we have indicated, you may speedily stop the ebullition and the discharge of red fumes, and save the batch of cotton with a comparatively small loss from complete solution, and the batch of pyroxyline gained will generally be of the powdery kind, suitable for many purposes. Should your hands not be covered with thick gauntlets at the time, you risk receiving severe wounds from the acid, which often spurts out during the ebullition.

**TYRO.**—The deposit on the plate sent is fog, proceeding probably from two causes: the use of a bath containing organic matter and probably insufficient acid, and the use of an imperfectly cleaned plate. The fact that the foggy deposit distinctly shows the circular markings caused by the final polish of the plate indicates beyond a question that the plate was not absolutely chemically clean, and probably slightly damp.

**T. E. LORD.**—The portrait of Jabez Inwards is in many respects good, but just a trifle hard. The strongly marked face and grizzled beard would have borne a little longer exposure to secure perfect softness.

**J. GLASSON.**—Newman's Manual of Photographic Colouring will answer your purpose. You will find details of enamelling in our last YEAR-BOOK.

**C. H. C.**—A further supply from America of Bigelow's Album is shortly expected.

**RES NON VERBA QUÆRO.**—The lens you mention may be used with a solar camera for enlarging purposes. The ordinary size of condenser used with a solar camera is nine inches diameter and eighteen inches focus. To work with the solar camera satisfactorily you will require an arrangement for moving the mirror so as to keep the sun on the centre of the lens. The solar camera, requiring absolute sunlight, is not the most desirable means of enlarging in a country like ours, where sunshine is rare and uncertain. You will find the method of producing a transparency, and from that an enlarged negative, a simpler and easier plan. You will find that method more than once described and discussed in the NEWS during the last twelve months. 2. Obscuring the glass on the south side of the studio will relieve you from the direct rays, and from the trouble of direct sunlight.

**F. H. W. B.**—The slight mottling in your prints is due to imperfect fixation in a very slight degree. Either the hyposulphite has been weak, or used to fix too many prints; or the prints have not been left in sufficiently long; or the prints have stuck together a little, not permitting the perfect action of the solution; or the temperature has been too low. In cold weather, the fixing power of the solution is very much reduced. You will notice that the mottling is generally in the skies and light parts of the picture, which have contained the greatest amount of unreduced chloride of silver, and have consequently required more solvent action from the hyposulphite to remove it. The prints upon which you ask our opinion are very good, but one or two of them would have borne a little longer exposure. The bare suggestion of a tint in the paper is not at all unpleasant. The condemnation of tinted paper to which you allude had reference to a direct and positive colour, which destroys the artistic quality of either landscape or portrait. There is no work devoted solely to landscape work. Mr. Robinson's "Pictorial Effect in Photography" is the best work to which you can refer. Some years ago there was a "Catechism of Chemistry" given serially in the PHOTOGRAPHIC NEWS, and subsequently reprinted in a little volume, which is now out of print. "Hardwich's Manual of Photographic Chemistry" is the only volume devoted essentially to chemistry in connection with photography. The older editions, now out of print, contain more chemical information than the last edition. If you could pick up one of the older editions, it would suit you best.

**B. F. R.**—We can only explain the issue of the erroneous announcements by supposing the error to have been an accident or oversight. Certainly they were without authority. No further prizes are announced, and there is no probability, at present, of any further renewal of them; certainly not for next year, we believe. **SPECIMENS WITHOUT NAME.**—Half-a-dozen card portraits, without name, are enclosed for our comments. No. 1 is good in many respects, but a little too low in tone; No. 2 is also good, but the partial vignetting is not well managed; No. 3 is flat from the presence of too much evenly diffused light; No. 4 suffers from the same fault, and is a little hard; Nos. 5 and 6—two portraits of a pretty little white dog—are good, and would have been much better if the focussing had been more careful; they both suffer from imperfect definition.

**N. T.**—So far as we know, the meeting of the Photographic Society will be held at the usual time and place: the second Tuesday in November, in the Architectural Gallery, Conduit Street. The exhibition will close next Thursday.

**PUZZLED.**—The term enamel has two applications in photography. Its correct application is to burnt-in or ceramic pictures; but the term enamelling is also used to describe the fine surface given to prints by a coating of gelatine and collodion. The latter process we have repeatedly described, as well as the former.

Several Correspondents in our next.

## PHOTOGRAPHS REGISTERED.

- Messrs. J. RUSSELL and Sons, Chichester,  
Three Photographs of Dr. Hook.  
Two Photographic Groups of Bishop of Chichester, the Patriarch of Antioch, and Bishop of Jerusalem.
- Mr. S. H. FYFE, Glasgow,  
Oil Painting of Steamer, *State of Indiana*.  
Photograph of Oil Painting of ditto.
- Rev. J. L. LYNE, Llanthony Abbey.  
Five Photographs of Rev. J. L. Lyne.
- Mr. C. KEEPING, Exeter,  
Photograph of Sale at Mr. H. Sandford's House.
- Mr. GILLARD, Gloucester,  
Four Photographs of Sir William Guise.
- Mr. H. GREGSON, Luton,  
Photographic Group of "The Luton Eleven Cricketers."
- Mr. T. RHODES, Burnley,  
Four Photographs of Rev. Richard Evans.
- Mr. TYRACK, Norwich,  
Photograph of Scroll Border.
- Mr. LORD, Wincanton,  
Photograph of Jabez Inwards, Esq.
- Mr. R. TUDOR WILLIAMS, Monmouth,  
Photographic Group consisting of Bishop Brown, Miss Florence Herbert, Miss Herbert, Mr. J. Monteith, and others.



## The Photographic News, November 6, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

LUYNES — CRAWSHAY — VOIGTLÄNDER — PHOTOGRAPHIC BOOK ILLUSTRATIONS — ARRIVAL OF THE TRANSIT OF VENUS EXPEDITION.

*Luynes—Crawshay—Voigtländer.*—During the Prince of Wales's recent tour on the Continent, he was the guest of an ancient family, whose name is still gratefully remembered by photographers even outside its native country. There is no worthier representative of the *vielle noblesse* throughout the fair land of France than the Duc de Luynes, and it is a name which the present generation honours, moreover, for the sake of what it has done for science and art. The present head of the family is but a child, for his father fell in the cruel war of 1870-71, in company with many other noblemen, fighting under a republican flag for their country's sake; the latter enjoyed the family title for two or three years only, but during that brief period proved himself a worthy scion of the family. As a traveller his fame is established, and as a photographer the world is to know more of him, for as our Paris Correspondent stated last week, a work is about to be published entitled a "*Voyage in Syria*" which will be illustrated by photographs taken by the late duke during his tour through that country. The photographs are to be printed, we are told, in fatty ink by the process of M. Negre, whose name as a photo-mechanical printer is already well known. The late Duc de Luynes' book will therefore be illustrated by means of a method the cultivation of which is due in a great measure to the encouragement given by his family; for it was for the purpose of inciting photographers to the working out of a photo-mechanical process, be it remembered, that the prize of ten thousand francs was offered by the grandfather of the present and father of the late Duc de Luynes, a prize which, in France especially, was fruitful in bringing forth many useful methods. It was this Duc de Luynes also, dying but half-a-dozen years ago, who devoted a large portion of his great wealth to the cultivation of the arts, a statue in solid ivory being one of the finest and rarest works produced through his munificence. As a man of science, and painter of no mean ability, he was one of the first to appreciate the wonders of photography, and was ever encouraging experimentalists in their endeavours to combine photography with the printing press. The prize of ten thousand francs was spread over two years, being divided by the judges into two awards, one of two thousand, and the other of eight thousand francs, the latter not being apportioned until twelve months after the first. The larger award, our readers no doubt remember, fell to the lot of M. Poitevin, as the originator of printing from colloid films, and we think that, on the whole, the award was a very just one. It is a singular coincidence that the amount of the Luynes prizes is about the same as that presented by Mr. Robert Crawshay, of Cyfarthfa Castle, the sums given by that gentleman falling little short of four hundred pounds. The circumstance is of course merely a coincidence, for it is not likely that Mr. Crawshay had the Duc de Luynes' gift in his memory when he made known his intention. France and England are not alone, however, in being fortunate to possess amateurs wealthy and generous enough to encourage photography in this way. Germany, too, in the person of Baron Voigtländer, has come forward nobly, and placed at the disposal of the Vienna Photographic Society funds for the purchase of gold and silver medals, to be awarded periodically, for the encouragement of the art. Having acquired a competence mainly through photography and photographers, he gratefully determines to do something for the art to which he owes so much. We repeat, may photographers long continue to honour the names of the generous trio, Luynes—Crawshay—Voigtländer.

*Photographic Book Illustrations.*—Two other journals have followed the example of the *Figaro Programme*, and present their readers with illustrations produced by photo-mechanical printing: one of them giving a Cabinet picture, and selling for sixpence, and the other (*The Stage*), published at twopence, containing a Carte print. All of these are produced by Woodburytype; but, judging from recent examples shown by the Autotype Company, and others who occupy themselves with the colloid process, the time is not far distant when we shall have illustrations in our periodicals of this nature. Meanwhile we hear rumours of a Christmas book to be issued, we believe, by Sampson, Low, and Marston, which is to contain a score of fine illustrations, Cabinet size, now being produced by the Photo-Relief Company, at Brompton, and which will most certainly be one of the best gift books of the season. It will be entitled "*Beautiful Places*," and the photographs will be twenty of the most beautiful scenes in the world, from Indian palaces to the snow peaks of Switzerland. We cannot help thinking that if this work is put properly before the public, it will place photographic book illustrations on a far more stable basis, and give them at once a more recognized position, such as they have never yet attained.

*Arrival of the Transit of Venus Expeditions.*—We are glad to hear of the safe arrival of several of the British Transit of Venus expeditions. Captain Abney, R.E., who had the shortest journey to make, and was, therefore, one of the last to start, has arrived with his party in Egypt. Lieutenant Darwin, R.E., who undertakes the photographic work connected with the party at Rodriguez, has also arrived at his destination. Captain Tupman and Professor Forbes are at Honolulu, and Major Palmer in New Zealand. Father Perry, who is in command of the expedition to that out-of-the-way place, Kerguelen's Land, has left Cape Town, and is, no doubt, also at his goal by this time. Mr. Gill, who is Lord Lindsay's lieutenant, has been at the Mauritius for some time awaiting the arrival of his lordship in his yacht, with the staff and necessary apparatus.

### ON THE PHOTOGRAPHIC TRANSPARENCY OF VARIOUS BODIES, AND ON THE PHOTOGRAPHIC EFFECTS OF METALLIC AND OTHER SPECTRA OBTAINED BY MEANS OF THE ELECTRIC SPARK.

BY W. A. MILLER, M.D., LL.D.\*

19. Coloured gases, whether elementary or compound—such as chlorine, bromine, and nitrous gas—have long been known to exert an absorptive action upon the luminous rays;† and their effect is not less marked upon the invisible prolongation of the electric spectrum.

The effects of the three halogens, chlorine, bromine, and iodine, in the form of vapour, are particularly remarkable. As a general rule, when a body exerts an absorptive influence, the absorption is greatest in the most refrangible portions; but the reverse of this occurs in the case of chlorine and of bromine. A column of chlorine two feet in depth cuts off the whole of the less refrangible portion as far as 143·5; beyond that a distinct impression is obtained as far as about 159. With bromine diffused in the form of diluted vapour the impression commences at 106, and is continued distinct, though rather feeble, to the extreme end of the spectrum. The apparatus required a slight modification to adapt it for the experiment with iodine. I used a glass tube six inches long, the open ends of which were ground flat so as to admit of being closed by thin plates of quartz; this was enclosed in a brass tube; a few grains of iodine were introduced, and the quartz plates fixed by metallic caps perforated to admit the passage of the rays; this tube

\* Continued from page 484.

† For an historical sketch of the progress of discovery in relation to the production of bands in the spectrum, the reader is referred to a paper by the author in the *Pharmaceutical Journal*, February, 1862, p. 17, *et seq.*



could then be supported as usual between the spark and the prism, and could be raised to and kept at a temperature beyond that necessary for the volatilization of the iodine. The electric light, after traversing such a column of vapour of an intensely deep violet colour, gave a strong spectrum, extending from 96.5 as far as 112, then it gradually faded till it disappeared at about 118; the impression became again rather faintly but distinctly visible at 142, and gradually disappeared at about 156. It is interesting to notice a somewhat similar interrupted absorption of the rays, though at a different part of the spectrum, in the case of the metallic iodides.

Both peroxide of nitrogen and peroxide of chlorine, in a stratum of two feet in depth, wholly absorb the chemical rays; but when more dilute or in shorter columns, they each give characteristic absorption-bands.

20. There appears to be little or no connexion between the absorptive power of any particular gas for the chemical rays, and its power of absorbing radiant heat as determined by the experiments of Dr. Tyndall.\* Aqueous vapour is highly diatinctic, though not diathermic: olefiant gas exhibits a similar difference: and various other instances might be pointed out.

21. The most interesting fact, however, disclosed by these various experiments is the persistence of either the diatinctic or the absorbent property in the compound, whatever be its physical state—a circumstance which proves that the property under consideration is intimately connected with the atomic or chemical nature of the body, and not merely with its state of aggregation.

The following diagram represents approximatively the relative position of the portions of the spectrum transmitted in a few of the cases described in the foregoing section of this paper. No attempt is made to indicate partial absorption of the rays. In one or two instances, where complete absorption at a particular part of the spectrum occurs, this has been indicated by an interruption in the line.

*Relative Absorptive Action of Various Media upon the Electric Spectrum of Silver.*

Scale of Millimetres.	0	10	20	30	40	50	60	70
Quartz train, silver spectrum	—	—	—	—	—	—	—	—
Ice, water, fluor spar...	—	—	—	—	—	—	—	—
Rock salt ...	—	—	—	—	—	—	—	—
Bromide of sodium	—	—	—	—	—	—	—	—
Iodide of sodium	—	—	—	—	—	—	—	—
Nitrate of soda	—	—	—	—	—	—	—	—
Carbonate of soda	—	—	—	—	—	—	—	—
Sulphate of soda	—	—	—	—	—	—	—	—
Sulphite of soda	—	—	—	—	—	—	—	—
Hyposulphite soda	—	—	—	—	—	—	—	—
Flint glass ...	—	—	—	—	—	—	—	—
Thin glass for microscope ...	—	—	—	—	—	—	—	—
Mica ...	—	—	—	—	—	—	—	—
Alcohol ...	—	—	—	—	—	—	—	—
Ether ...	—	—	—	—	—	—	—	—
Benzol ...	—	—	—	—	—	—	—	—
Bisulphide of carbon...	—	—	—	—	—	—	—	—
Acetic acid ...	—	—	—	—	—	—	—	—
Oxalic acid	—	—	—	—	—	—	—	—
Tartaric acid	—	—	—	—	—	—	—	—
Citric acid	—	—	—	—	—	—	—	—
Coal gas...	—	—	—	—	—	—	—	—
Sulphurous acid gas ...	—	—	—	—	—	—	—	—
Hydrochloric acid gas	—	—	—	—	—	—	—	—
Hydrobromic acid gas	—	—	—	—	—	—	—	—
Hydriodic acid gas ...	—	—	—	—	—	—	—	—
Chlorine ...	—	—	—	—	—	—	—	—
Bromine ...	—	—	—	—	—	—	—	—
Iodine ...	—	—	—	—	—	—	—	—

## § 2. THE ABSORPTION OF THE CHEMICAL RAYS BY REFLECTION FROM POLISHED SURFACES.

22. In my earlier experiments I had much difficulty in obtaining a spectrum all the parts of which were even approximatively in focus in the same plane, and, with the view of remedying this defect, I tried the effect of substituting specular reflection for the refracting action of a lens. This led me to compare the reflecting power of different polished surfaces for the chemical rays. With this object in view, a small polished plate of the material under

experiment was supported at an angle of 45°, as shown in fig. 3 (par. 6), opposite the vertical slit of the apparatus, so that when the source of light *c* was placed at right angles to the axis of the tube, the rays were reflected down the tube in the direction of that axis. The arrangement of the prism, lens, and camera was the same as that already described (6). As, however, much less light was reflected upon the prism from the polished surface than that which fell upon the prism when the direct rays of the spark were employed, the exposure of the sensitive plate in the camera was prolonged from five minutes to ten.

23. Among the metals and alloys thus submitted to trial were platinum, gold, silver, mercury contained in a trough with quartz faces, lead, copper, tin, cadmium, zinc, aluminum, steel, brass, and speculum-metal. In addition to these, the reflecting-power of quartz, window-glass, and Iceland spar was also tried.

No judgment of the perfection of the reflecting-power could be formed from the colour of the metal. Gold possesses the power of reflecting all the rays, even the most refrangible, very equally, though somewhat feebly. Next to gold ranks burnished lead, some part of the spectrum of the electric spark reflected from lead being more intense than that from gold. The length of the spectrum obtained from the light of the electric spark between silver points, by reflection from the surface of these two metals, extended from 96.5 to 170.5, or over the full distance of that obtained by the direct light of the spark, viz., 74 divisions of the scale which I have adopted. With all the other metals the spectrum of the same reflected spark terminated at 159.5, covering only 63 divisions of the scale.

The spectrum from a silver surface was remarkable. The impressed image was strong up to 112.5; then an abrupt cessation of the reflected rays occurred for a distance of 1.5 division; beyond this the reflection gradually returned, and continued tolerably intense till it reached 159.5, covering 63 divisions of the scale.

The reflection from mercury was weak in the middle, but strong towards each extremity. Platinum, zinc, and aluminum resembled mercury in their effects, but the spectrum was much less intense. The reflection from cadmium was similar, but still weaker.

The spectrum of the rays reflected from copper was deficient in strength for the last half of the more refrangible portion; and that of brass was similar to it, but weaker. The reflection from a surface of steel was more intense than that from any surface which I employed, but it ended abruptly at 159.5, or at the 63rd division of the scale. The spectrum reflected from tin was nearly as complete as that from steel.

A small concave mirror of speculum-metal gave an intense spectrum for the first half; but the more refrangible portion was deficient in power, and no rays were reflected beyond 159.5 (63 divisions), the point at which the other metals also failed. I therefore abandoned the attempt to substitute a speculum for the lens, with which latter I succeeded subsequently in obtaining a field sufficiently flat for the purpose.

24. The reflection from the surface of transparent objects was so scanty that, of course, no idea was entertained of using such bodies as mirrors; but it may be worthy of notice that a feeble spectrum was obtained from surfaces of quartz, window-glass, and Iceland spar, extending to 159.5, or over a length of 63 divisions of the scale—that is to say, fully as far as the majority of the metals. The quantity of the reflected rays was small, but its quality was similar to that of the rays reflected from metallic surfaces.

(To be continued.)

## THE PRESS AND THE EXHIBITION.

The London Correspondent of the *Liverpool Daily Courier* has some appreciative remarks. He says:—

There is much to interest and gratify lovers of artistic photography



in this year's exhibition of the Photographie Society of Great Britain, which arranges its 466 exhibits in the spacious rooms in Suffolk Street, Pall-Mall. Portraits, choice landscapes, sketches of nature, animals, plants, and nondescript subjects are comprised in the varied collection. The competitive departments are particularly good, and local competitors stand well in the struggles after ideal perfection of sun-painting. The slow improvement of method achieves results which are more or less triumphs, in so far as they attain the charm of softness while maintaining clearness of form. There is a delicious gradation of shade in some of these specimens, which distinctly mark the advance made since photography has been taken up by professors imbued with a genuine sense of art. Mr. Robert Crawshaw, Cyfarthfa Castle, has again offered handsome prizes to stimulate competition in various branches of that art in which he is so successful and enthusiastic an amateur; and these competitions constitute the most distinctive feature of the exhibition, comprising as they do direct portraiture, enlargements, and landscape. Mr. C. Ferranti, Bold Street, Liverpool, obtains the Crawshaw prize (£25) for the best portrait enlargement, of which he shows four examples; and his success is the more complete as he does not contend in any other class, and has no failures to set off against his triumph. These enlarged portraits are so exquisitely artistic that an unprofessional critic would be rash to say which is most perfect of the four. The highest qualities one can perceive in photography are attained in Mr. Ferranti's delicate sense of finish. Mr. Crawshaw is himself a competitor in the class for seven-inch heads taken direct from life, and the judges have awarded him the second position—for of course he could not accept a money prize contributed from his own pocket. The landscape competition has produced some choice and charming examples, Messrs. Robinson and Cherrill, Tunbridge Wells, taking the first place. Messrs. Vandyke and Brown are of course represented in the exhibition, showing three half-length portraits in the class of direct enlargements, theirs being done on opal glass by development, very pleasing effects; and also three enlargements in carbon, slightly retouched. Mr. Young, Llandudno, sends very creditable exhibits in portraiture; and Mr. T. Edge, Preston, has a unique enlargement in—yes, in portraiture also, the “donkey that wouldn't go” being artistically represented caressing her foal.

(From the TIMES.)

Even with this, the nineteenth annual exhibition of the society fresh in one's recollection, we feel inclined to question whether the art—if it may not with more propriety be called the science—of photography is likely ever to become popular in that larger sense of the word which implies the favour of the people. It affords, indeed, occupation to a number of ladies and gentlemen to whose leisure hours amusement is more necessary than profit, and with this class, as we may gather from a list of the exhibitors in Suffolk Street, its popularity is undoubtedly on the increase. Popular, again, in one phase it is—that phase under which it was first introduced to public notice, and which lends itself only to the reproduction of the human face and form. To give and to receive “cartes-de-visite” is a favourite amusement with young men and maidens in every walk in life. In the old days, when portraiture was held as one of the fairest fields of the painter's art, this was an amusement beyond the reach of all but the wealthy. Not every man could go to Corinth in the days of Reynolds, or of Lawrence, or of Gainsborough; but now, in these later times, the pencil of that more truthful, if less pleasing artist, the sun, is at the command of all; and where, from cottage to castle, may not be found some specimen of his handiwork? There is a charm, too, we admit, in the recollections of some happy time passed far away from the common places of our daily life which this art can keep green for us. A broken statue or moss-grown ruin, castle crag, or village inn, each and all may recall some memory which we would not willingly let die; while so far now has the photographer advanced on his onward path that the critic can enjoy equally with the traveller, nor need the pride of the eye be lost in the pleasures of memory. But photographs, we fancy, are never likely to become popular with that large section of the community who go to see pictures much as they go to the opera or to the park—because their neighbours go. In the first place, they lack colour—that is, colour in the broad acceptance of the term—and colour with these people covers a multitude of sins; even the most ignorant, to whom light and shade, perspective and drawing, and all the *argot* of the studio are but words and nothing more, can recognize the beauty of colour. Then, again, photographs *en masse* are, from the smallness and delicacy of their treatment, somewhat wearisome to those who are unable or careless to appreciate such subtleties; and, lastly, the chief charm of photography lies, as we have said before, in a previous knowledge of the subject not always to be found among those who visit picture galleries at this season of the year. But, with all this allowed, we advise all who can to devote at least some portion of these shortening days to a walk round the society's rooms. There are to be found in them all manner of subjects, taken by every process of photography known to man.

Portraiture, of course, is well represented, and well-known faces look down on you at every step you take. From loyalty, if from no

other motive, we may mention first an autotype enlargement of a portrait of his Royal Highness the Duke of Edinburgh (70), from the studio of Messrs. Spencer, Sawyer, Bird, and Co.; Mr. John Millais, R.A. (65), Miss Wallis as Amy Robsart (47), and Miss Neilson (17) are also there, in the same style and from the same hand. The fidelity of the likeness cannot be gainsaid, but whether that style of treatment is a pleasant one is, we think, a question which admits of more argument. At any rate, if we must have it, we prefer it when applied to inanimate objects, as the “Thames near Maidenhead” (62), “Ely Cathedral” (53), and the “Trout Stream” (219), all of which, and more especially the last, we are inclined to place above the portraits of the same artists. Mrs. Cameron sends twelve contributions, most, if, indeed, not all of them, portraits. This lady has deservedly attained a high reputation in her art, but we hardly fancy that the best specimens of her work are to be seen in Suffolk Street. Of the twelve, we like best a pretty picture of a little child praying at its mother's knee for the father's safe return (202). “Kiss me, Mamma!” (204), a portrait of Lady Hood and her daughter Mabel, is also pleasing, but Miss Mabel Bateman does not appear to advantage either as “Urania” (182) or Queen Henrietta Maria with her children (203). To the former is appended a quotation from “In Memoriam”—“Urania speaks with darkened brow”—and the aptness of the quotation cannot be denied, for the brow of Urania is so remarkably dark that it is with difficulty we can separate it from the background of flowing hair and the overhanging boughs beneath which Urania stands. Distinctness is surely one of the first essentials in a photograph. In large breadths of landscape and composition pictures this is a quality undoubtedly difficult of attainment with the camera, but we confess we should not be inclined to allow this excuse to portraiture. The colour in which photography appeals to the eye is not in itself pleasing, though, of course, this is far less apparent in some instances than in others; but when to this unavoidable defect is added a slovenliness of execution—whether from accident or design—then, we submit, the photograph is lacking in one of the first requisites of good photography. There is, apparently, a growing tendency towards this style of work among amateurs which we fail to notice among their professional brethren, and it is on this hint we venture to speak. Three children's heads in one frame (330) from the same lady, though graceful in pose and in expression, are open, but in a less degree, to the same objection. Of all the portraits which have taken prizes in the Crawshaw Competition we like “The Gamekeeper at Home” (332), by Robert Crawshaw, best, though the judges have only awarded it a second prize. Passing to the landscapes, we find that our space will not allow us to say all that might be said on this head. They are as good as they are numerous, and though, where all are so good, comparisons might be spared, few will, we think, be disposed to deny the palm to Colonel Stuart Wortley. It is almost impossible to imagine photography carried to a higher pitch of perfection than in this gentleman's view of Carnarvon Castle (97), by the new uranium dry process, as the catalogue tells us. It has all the softness of a water-colour drawing, and, indeed, almost the colour, while the sky is as a sky of Turner's. “The Hill Side” (98) and “The Seint River at Low Water” (99) are good too, but not so good as this. Mr. Vernon Heath has two bits of Welsh scenery (79 and 80), and a view of Warnham Court (89), which fully keep up the reputation he has won. Mr. Bedford sends 12 charming little bits (20 to 31), of which we like the Welsh views best, and the “Declining Day” (278) of Messrs. Robinson and Cherrill might well have won the Crawshaw prize without its two companion pictures, “Repose” (276) and “Under the Greenwood Tree” (277) to help it. Mr. Sanderson also takes a prize with a view at Aberglaslyn (287), and Mr. Nicholson's “Valley and Pond of Bonechurch” (296) certainly deserves another. From the coast of Jersey Mr. Reuben Mitchell gives us some wonderful effects of threatening sky and sunset in 308 and 310, but the finest example of this most difficult study comes from Mr. G. Stodart, who in one frame gives us four instantaneous views taken at Margate (385-388), which are perhaps the most wonderful specimens of the photographer's art in the exhibition. In one especially, where the moon, breaking through a bank of angry clouds, shines down on a quiet sea, which scarcely ripples round the timbers of the pier, the effect is rather that of an etching than a photograph. Nor must we forget to mention a series of Indian views (417-448) from Colonel H. Dixon, which are even more soft and clear than the generality of photographs taken by the Indian sun. A dead stag (375), by Captain Horatio Ross, and a frame full of “Odd Dogs” (136), some of them very odd dogs indeed, by Messrs. Jabez and Alfred Hughes, will claim most attention from the lover of animal life. We have by no means exhausted our list of noteworthy objects, but we have, we trust, said enough to induce our readers to go to Suffolk Street and form an opinion for themselves.

#### PHOTOGRAPHING THE TRANSIT OF VENUS.\*

*Division of Labour.*—The duties of the photographers are as follows:—One of the assistants is to coat the plates, immerse them in the nitrate bath, and take them out when so directed by the chief. He is to be careful to preserve the order of the numbers. Another

\* Continued from page 525.



photographer is to develop the plates and fix them; the first operation, including the washing, should not occupy more than one minute, and the second a somewhat shorter time. A third is to take the plates from the assistant who coats them, place them in the exposure-frame, clamp them, make the electric signal, spring the exposure-shutter, note the time by a chronometer, take the number of the plate and the reading of the level and temperature, enter these and other particulars in the proper book, and hand the plates to the developer. The chief photographer must keep watch over his subordinates, and see that their duties are properly performed. He is to obey such orders about times of exposure as the chief of the party may give.

During the two or three hours of intermission between the optical observations already directed, either the chief of party or first assistant should remain in the dark room to oversee the operations, and should then, so far as possible, relieve the photographers of the duty of making the exposures and keeping the record, so that two of them may attend to the development and fixing of the plates.

The chief must also make arrangements to have a plentiful supply of water for washing on hand on the day of the transit.

#### SPECIAL DIRECTIONS FOR TAKING REVERSED PHOTOGRAPHS OF VERTICAL LINES OF PLATE-HOLDER.

1. Cover the photographic objective with a cap having a slit half an inch wide through its centre from top to bottom. See that this slit is truly vertical.

2. Cover one-half the plate with a screen fastened to it, and therefore turning with it, having one edge straight and vertical. This screen may be of yellow or black paper, entirely opaque to the photographic rays. The screen must be so arranged that when the plate-holder is reversed it shall cut off the rays of the sun which passed in the other position, and pass those which were before cut off.

3. See that when the plate-holder is reversed, the bubble of the level does not go to either end of the tube. If it does, the screw which adjusts the level of the cast-iron base on the pier must be touched until the bubble is in play in both the direct and reverse positions of the plate-holder. To do this it may be found necessary to adjust the level on the plate-holder; but this must only be done when absolutely necessary, and the fact of its being done must be entered in the journal.

4. Put a non-sensitized plate into the portable plate-holder, and put the latter into place by its guiding-pins.

5. See that the non-sensitized plate is parallel to the ruled plate, both in the vertical and horizontal direction. If not parallel, make it so by slightly turning the main plate-holder on its vertical axis, and adjusting the screw of the arm of the portable plate-holder. When parallel, the reflections of a candle from the non-sensitized plate and from the ruled plate will all coincide when seen through the flame of the candle itself from the back part of the photographic room.

6. Adjust the heliostat, and set it going, so that one-half the image of the sun shall be cut off by the screen on the plate-holder when exposure is made.

7. Replace the non-sensitized plate in the portable holder by a sensitized and albumenized one, and put the holder gently back into the position described in 4. Read the level, and make exposure. Owing to the covering of the objective, it will probably be necessary to move the slide by hand to get exposure enough.

8. The operator will then gently pick up the portable holder while an assistant reverses the main plate-holder on its axis, being careful to turn it exactly 180°. To indicate when to stop, suitable marks must be made.

9. The operator carefully returns the portable holder to the position described in 4 and 7, avoiding any jar which may change the position of the sensitive plate in the holder. The level is read, and exposure is again made, but not till the plumb-line has had ample time to come to rest.

When developed, the vertical lines should come out with all attainable sharpness and distinctness.

Always make the first of the pair of exposures in the direct position of the main plate-holder.

When satisfactory photographs are obtained in the manner described, put the screen on the other half of the plate-holder and repeat the process.

These reversed photographs must be taken on every sunny day during the month preceding the transit and the week following it. The set taken on each day must be accompanied by two photographs of the sun, showing the ruled lines, taken in the ordinary way without the screen, the arm of the plumb-line being reversed between the exposures. The level and the thermometer must be read in all photographs of the sun which are to be preserved.

#### DIRECTIONS FOR MEASURING THE DISTANCE BETWEEN THE OBJECTIVE AND THE PHOTOGRAPHIC PLATE.

The long rod, being in place as already described, must lie quite straight, in a line passing directly over the centres of the objective and of the plate-holder. The observer must sight along the rod to see that it is straight, and if it is not, the supports must be changed

to make it so. Then hang one of the fine brass-wire plumb-lines over each end of the rod, the bob hanging in a vessel of water. Take care that the outer bob is completely under water, so as to be protected from the wind. When the plumb-lines are at rest, press the arms of the jaw-micrometer against the edges of the object-glass, and by the two rack-motions bring the end of the central arm gently against the face of the objective, and the jaws into such position that the plumb-line shall be seen through and between the pin-holes. The plumb-line can be best seen through the holes with an eye-glass. In doing this, take great care to hold the micrometer horizontal. When all the adjustments are correct, read and record the vernier. When the measure is completed at the objective, pass to the plate-holder and take similar measures from the outside of the ruled plate. Each measure should be repeated several times by different observers, and each separate result should be recorded, with the initial of the observer, the temperature of the rod, and any other particulars necessary to a judgment of the observation.

Should the rod be too long, file a vertical notch on each side near one end, loop the plumb-line, and let it hang in these notches.

The distance between the surface of the ruled plate from which the measures are made and the collodion film when a picture is taken must also be repeatedly measured as accurately as the party is able to do it.

#### ON MAKING COMBINATION GROUPS.

BY B. J. EDWARDS.\*

In compliance with the invitation of our esteemed Secretary, I have to call attention to a method of making combination groups which is extensively practised in America. The plan is especially useful where a large number of figures are to form a group, and when it is only possible to obtain the photographs of the several members of the group by a number of sittings at various times.

In the first place it will be necessary to make a sketch of the desired group, introducing the required number of figures. The positions of the latter, and the general design of the group, may be varied to any extent to suit the subjects, taking care that the figures are drawn in true perspective, the front figures being larger than those in the background and middle distance. A suitable landscape or interior background is then sketched or drawn in black, and on a grey board, leaving space for the figures, which are lightly sketched in their proper places. A separate sketch is now made of each figure on small square pieces of tracing-paper; these little tracings are numbered to correspond with the figures in the sketch.

The separate figure negatives are now taken in the camera, the small tracings being held behind the ground glass to give the correct size and position of the figure. A print on albumenized paper is next taken from each negative, and having been carefully cut out, the figures are arranged on the background, and a reduced negative of the whole taken in the camera of the size required.

Some little care and skill are requisite to avoid showing the joinings. It will be found a good plan to bevel the edges of the prints from the back with a sharp knife. It will also be necessary for the foreground figure to be printed vigorously, those further back being printed more lightly, and sunned or toned down before being fixed.

Any little defect may be remedied or addition made with the brush on the finished picture. By this method groups of any number of figures may, with a little care and skill, be made in a very satisfactory manner.

#### AN AUTOMATIC, ECONOMICAL, SIMPLE, AND THOROUGHLY EFFECTUAL APPARATUS FOR REDUCING SILVER WASTES TO THE SULPHIDE.

BY W. T. BASHFORD.\*

For reducing silver wastes to the sulphide the advantages of sulphuretted hydrogen gas over sulphide of potassium are so well established that if a thoroughly satisfactory

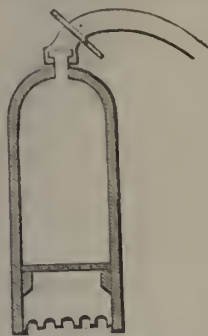
\* Read before the South London Photographic Society.

\* Read before the South London Technical Meeting.



mode of using it were well known, it would, in all probability, be universally employed.

The delicate and complicated apparatus employed by the analytical chemist, from its expense and liability to injury, is unsuited to the uses of the photographer; yet, from the reducing agent being ready at a moment's notice, it has very great advantages. Mr. Foxlee has recently published in the *British Journal* a very simple means of generating the gas for photographic purposes, but his apparatus has the disadvantage of liability to breakage, and requires some time to put it into action, and after its work is done as much time is required to make it cease its action; it is also liable to waste the offensive gas by leakage. The apparatus about to be described has the advantages of the costly generator, without possessing the disadvantages of either machine. It consists of a stoneware cylinder about seven inches in length and about three inches internal diameter, furnished with a moveable perforated bottom, resting upon three shoulders placed about two inches from one



end. The opposite end is closed to a small neck, perforated with a hole about a quarter-inch in diameter. To this neck is attached an india-rubber tube, with a pinch-cock close to the neck. The free end of the tube has a small piece of leaden pipe inserted into it to cause it to sink in the waste solution. The cylinder is filled to the shoulders with sulphide of iron in lumps, about the size of a hazel nut, and the perforated bottom is then placed *in situ* to prevent the iron falling out. The charged cylinder is now placed in

a suitable jar (say seven inches deep and six or seven inches diameter), and this jar is then filled with a solution of sulphuric acid one part, and water eight parts.

As long as the pinch-cock is closed, no action takes place; but the moment the pinch-cock is opened, the acid rises within the cylinder, and, acting upon the sulphide, immediately liberates sulphuretted hydrogen gas, which issues through the india-rubber tube. This action continues for any length of time, until its action is no longer required, when, by closing the pinch-cock, the gas stops flowing, and, filling the cylinder, expels the acid, which resumes its original position in the outer jar until it be again required, when at any moment a continuous supply of the gas can be obtained by simply opening the pinch-cock.

This automatic apparatus will be found inexpensive in first cost, extremely economical in use, is ready at any moment either to commence or cease its action, is not likely to get out of order or to receive injury, gives no trouble whatever, and thoroughly answers the purpose for which it is intended.

Lead may be used instead of stoneware, and a common gas tap may be soldered into the neck; but stoneware is preferable. If any one finds difficulty in procuring this apparatus, I shall be happy to supply a few similar to my own.

## Recent Patents.

### SENSITIVE GELATINE PELLICLE.

BY R. KENNETT.

THE following is the complete specification of Mr. Kennett's mode of preparing his sensitive gelatine pellicle:—

"The object of my said invention is the production of a new substance or compound to form an emulsion for photographic

purposes, and which, when prepared and sold in a dry or solid condition, will keep in this condition perfectly good for any length of time.

"My said improved substance or compound consists essentially of gelatine, or gelatinous matter, in combination with nitrate of silver, and with bromide of potassium, bromide of cadmium, bromide of ammonium, or with the chloride or the iodide of either of these salts in combination with either of the bromides above specified.

"In making the said compound, I prefer to employ the following materials and process—that is to say: I place in a dish or pan, of porcelain or other suitable material, about one pound of the substance known as Nelsou's gelatine, or other suitable gelatinous matter, to which I add about one hundred ounces of distilled water. This mixture of gelatine and water is allowed to stand for about three hours to soften the gelatine, and is then heated by a hot water bath, or otherwise, until the gelatine is thoroughly dissolved; I then add to the mixture or compound about eight and a quarter ounces of the bromide of potassium dissolved in water, and which must be thoroughly incorporated with the gelatine by stirring. I then incorporate with the said compound, while stirring the same, eleven and one-half ounces of nitrate of silver dissolved in water. The whole of the above operations must be effected while the gelatine is hot. At this stage of the process the said compound or emulsion will contain free bromide of potassium and nitrate of potassa, which must be eliminated, and which I eliminate as follows:—I pour the emulsion into glass or porcelain dishes to the depth of about a quarter of an inch, and let it stand long enough to become cold. I then remove it from the dishes, and cut it in small strips, and wash it with many changes of water, or in running water, until the free salts are all dissolved out. I then dry or desiccate the substance or compound, to render it capable of preservation for any length of time, and, therefore, fully accomplish the object of my invention. For this purpose I place the compound or emulsion in flat dishes, which are placed upon hot water boilers, or otherwise heated, until the said compound is reduced by evaporation to the consistency of a thick paste; then the said compound or substance is allowed to stand until it becomes cold. It is then removed by stripping it from the said dishes, and is placed, in suitable frames, in a drying closet, in which a circulation of dry air, either warm or cold, is maintained, whereby the drying or desiccation is completed.

"It will be seen, from the above description that the proper drying or desiccation of the compound is very essential to the success of my invention; but I wish it understood that I may employ any other suitable and convenient method of effecting the drying or desiccation of the compound instead of that above described. For instance, I may take the said substance or compound, after washing the same to dissolve out the free salts, and place it at once in the said drying closet; or expose it to an air blast, and thereby effect the drying or desiccation entirely without the application of heat. When dry, the said compound is cut into portions of convenient size, and in this condition will be ready for immediate use, or will keep perfectly good for a very long time. It may be conveniently made up into small packets for transmission by post to artists or amateurs in any part of the world. It is unaffected by changes of temperature or climate, and will render the plates to which it is applied highly sensitive, so that good pictures of animals, and other moving objects, may be easily obtained.

"The whole of the above described process for the manufacture of my new compound or substance must be conducted in a very weak non-actinic light. The quantity of gelatine used in the said compound may be varied to any desired extent; but the salts must always be in such proportion that there will be a slight excess of the bromide or chloride beyond its equivalent of combination with the nitrate of silver. Before its application to the plates, the said compound or substance must be dissolved in warm water, and it should be used in connection with the alkaline developer for dry plates.

"Having thus fully described my said invention, and the manner of performing the same, I wish it understood that I claim, a substance or compound for forming photographic emulsions which, when prepared in a dry or solid condition, as herein set forth, will remain perfectly good and fit for use for any required time."



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## THE SOUTH LONDON TECHNICAL MEETING.

THE technical meeting of the South London Society has now become an annual institution, amongst the most instructive and interesting of the various agencies in existence for the advancement of the art. The happy conception, originally due to Mr. W. Brooks, has now acquired a definite form, and has, by judicious organization, become freed from the risks which last year threatened to render nugatory a good idea. The papers read, and the discussions which follow at ordinary meetings, have, beyond question, their specific value; and the occasional exhibition of novelties as an incidental element of such has always been interesting. But an unquestionable want existed which was not quite supplied by these means, nor by the annual exhibition of pictures by the parent society. Photographers required some opportunity for seeing many novelties and improvements of a technical character of which they had only heard, and of receiving explanations of—or, if necessary, brief discussions on—novelties they might have seen. Society meetings are not legitimate occasions for dealers to advertise their wares; but it may be frequently convenient for photographers, and legitimate for manufacturers, to exhibit and explain, under proper limitations, novelties and improvements of recent introduction. Photographers are often greatly indebted to the constructive ingenuity of some of their brethren for very valuable aids in the shape of improvised contrivances, and other technical improvements, for the introduction and explanation of which a meeting of this kind gives special facilities. The meeting is held, too, at some time whilst the annual exhibition is open, to enable visitors from the country to be present at both, a facility of which many country photographers availed themselves on Thursday evening. The amateur novelties shown were all singularly ingenious and useful, and the trade novelties interesting, and introduced without anything which the most fastidious could regard as "too much of the shop," the presence of which to some extent marred last year's meeting.

## THE PHOTOGRAPHIC EXHIBITION.

### A FINAL GLANCE.

THE annual exhibition of the society closed yesterday, and has, we believe, in every way proved a greater success than could, under the circumstances, have been anticipated. The attendance has been good, and the financial results not much, we believe, below the results of last year.

A final glance at the contributions reminds us that there are many pictures worthy of attention which we have not had opportunity to notice, and some lessons to be learnt which might have been more fully dwelt upon. If the question of retouching had still been a moot point, we think that the results of the present exhibition would have tended much to confirm the position already accepted by most portraitists of position, namely, that moderate and legitimate retouching on the negative is desirable, whilst excess is destructive at once of the artistic and photographic value of the negative. In reply to the question as to what constitutes legitimate retouching, the answer is simple: the touchstone of legitimacy is success. Where the retouching is obviously obtrusive, where the texture of flesh is destroyed and that of marble substituted, where likeness or any natural truth is marred, the retouching is in excess, even if well done; it is always in excess when ill done. Some of the life-size direct pictures are very illustrative. Mr. Neilson sends three male life-size to the Crawshaw Competition, for which he deserves all honour. The work is, in many respects, very noble: well lighted, well posed, solid, and dignified. It is obviously quite untouched; there is a stern, rigid, Puritanic truth in it; but it is unlovely. Such pictures in black and white seem absolutely to demand some amelioration to bring them into conformity with the higher truth. The same is true of the grand female heads of Robinson and Cherrill. Last year this firm took the first prize; this year their photographic work is probably in no whit inferior to last year, but it is quite untouched; it sacrifices the higher artistic truth to conform to the literal standard of photographic truth. No one, we are satisfied, ever saw the faces of the models look so unattractive as the uncompromising camera has rendered them. In the next size—fifteen by twelve—the absence of retouching would have been much more tolerable; and Mr. Neilson has here, without touching, attained a very high degree of success; in "Reverie" and in "A Passing Thought" he has produced exceedingly fine pictures. Messrs. Robinson and Cherrill in that size have retouched a little, and obtained the prize. Mr. Crawshaw's own life-size heads were admirable examples of the refinement, without loss of truth or vigour, conferred by very little judicious retouching.

In the enlargements, with the exception of a fine collodion transfer by Mr. Palmer, we had no examples of untouched work: all the small negatives were obviously retouched in greater or less degree, and some manifestly in excess. The prints varied in degrees of finish, some being, apparently, untouched, whilst others were considerably worked upon. The prize enlargement, one of four very fine things exhibited by Mr. Ferranti, of Liverpool, was, besides being a very charming picture of a charming face, a fine example of the result of little work judiciously applied on the print. From a careful comparison of the prize picture with the small print and the unfinished enlargement, we find evidences of but very little retouching, the chief work consisting in giving a dull retiring surface to the background, and glazing the shadows of the hair, drapery, &c., to give them depth. In art the value of almost everything depends upon its relation to something else: force and relief for the figure are here gained by degrading the background; value and brilliancy are given to the lights by deepening the shadows. It is obvious that in pursuing this plan there is little tampering with the actual drawing and detail of the picture, and increased pictorial effect is secured without risking the loss of the likeness. Some very fine enlargements are shown by Messrs. Vandyke and Brown, finished, apparently, in a manner very similar to those of Mr. Ferranti, but suggesting somewhat more retouching. A beautiful female face, of winning expression, was very fine. Their enlargements on opal glass were singularly beautiful, and of admirable tone. A number of fine carbon enlargements, exhibited by the Woodbury Printing Com-



pany, untouched in the prints, but clearly touched at some stage in the negatives, were delicate and well defined, but they lacked force, modelling, and roundness; this lack probably being due to the original small negatives. Mr. Edwards exhibited several of his very admirable enlargements, admirable in all respects: well chosen subjects, fine small negatives skilfully retouched, and perfect enlargements. A pretty pensive female head, in profile, finely lighted (357), pleases us best, as besides the fine subject and skilful photographic treatment, it appears to illustrate the happy medium between too much and too little retouching. Least retouched, and exceedingly meritorious, amongst the enlargements, were those sent in too late for competition by Mr. Gillard; a few crisp touches on the negative would, however, have improved some of them.

Every term of praise for every quality desirable in enlargements seems to be fairly claimed, as we have said before, by the wonderful series of enlargements exhibited by Messrs. Spencer, Sawyer, and Bird; and as these are from negatives of all kinds produced by many different artists, and the excellence, as enlargements, seems to be pretty equal, the merit is manifestly due to the enlarging process and the mode in which it is worked. Indeed, nothing can more satisfactorily illustrate how much in successful enlargements is due to a suitable transparency (a point on which we insisted a dozen years ago) than this exhibition. Mr. Edwards produces a perfect albumen transparency, so delicate that the deposit rather resembles stained glass than the granular deposit of silver thrown down by development. The Autotype Company use a gelatine transparency prepared from a tissue of peculiar delicacy, and they produce a similarly perfect textureless transparency; and from these transparencies both succeed in producing enlargements which leave very little to desire. The "Trout Stream" in landscapes, a picture worthy of Salvator Rosa, and "Sunshine" in portraits, are singularly satisfactory examples.

Photo-mechanical printing is not extensively represented in the exhibition, the Woodbury Photo-Relief Process, and the Photo-Collotype Process, as worked by Messrs. Spencer, Sawyer, and Bird, being the only examples. Of the excellent examples of the former we have already spoken as almost, if not quite, indistinguishable in many cases from silver printing. The collotype examples of the latter firm appear more wonderful the more thoroughly they are examined. The architectural subjects, such as different views of the Norwich Cathedral, the Houses of Parliament, perfect as they are—and they are admirable—do not seem so trying a test as portraiture; but a frame of portraits, of some of which we have seen silver prints, are, if possible, more perfect. A curious opportunity occurs in one case of comparing two methods of permanent printing. In our last, in referring to some inaccuracies in the notice of the *Standard*, we said that they had attributed to the Autotype process some copies of Turner's *Liber Studiorum*, which were really by the photo-relief process. In this case we were in error: we had failed to observe at the time that a similar frame of copies from the *Liber Studiorum* were exhibited by Messrs. Spencer, Sawyer, and Bird, the latter being produced in two tints, a lighter and somewhat warmer pigment being apparently used for the middle and lighter tints, and a deeper colour for the deepest shadows, a plan by which force and delicacy are secured at once, the full value being given to the atmospheric tints in Turner's masterly work, without losing force in the foreground. The general tone reproduces the sepia tint of the originals more perfectly than the more foxy tint of the photo-relief prints, which are less harmonious than those in two tints.

There are various other contributions upon which we should have liked to make a passing comment if time and space permitted—Mr. Hunter's charming little cabinet groups, for instance: these have puzzled many visitors by

their resemblance to opal glass. We learn, on enquiry, that this is due to the paper prints being mounted in optical contact with the glass by means of clear gelatine. The delicacy, softness, and general fine qualities of the results of the gum-coffee process, as illustrated by the examples of Mr. Baynham Jones, were worth observation. The portfolio of exceedingly beautiful Javan and Indian views by Mr. Albert Woodbury, and the album of New Zealand photographs by Mr. Mundy, would require many columns to describe. Signor Ponti's album of direct life heads, with diagram and description of the novel camera in which they were produced, might have been described if we had space. But we must now perforce take leave of a very interesting exhibition.

#### "A HAPPY THOUGHT."

EVERYBODY knows that an evening exhibition of paintings is ordinarily a very unsatisfactory thing. Common gaslight fails to show the colours as they appear by daylight. The reason is obvious: gaslight is a very yellow light; its spectrum consists of red and yellow almost exclusively; the blue, as photographers well know, is almost totally wanting, and therefore, in pictures seen by gaslight, the yellows and reds are well brought out, while the blues and greens and all the tints containing blue are misrepresented. To remedy this defect during the evening exhibitions of "The Roll Call," which have just taken place in Newcastle, Mr. Swan suggested the employment of the lime-light instead of common gas, and the suggestion has been carried out with marvellous success, thousands of persons thronging nightly to see the famous picture, and expressing surprise and satisfaction with the effect produced by the novel mode of illumination.

Certainly it is no exaggeration to say that all the colours were as well rendered by the lime-light as by daylight. Two jets were placed in front of the picture, and nearly floor level, very much in the position of stage foot-lights. The jets were screened from the spectator by a draped barrier in front of the picture, and by a horizontal board extending from the top of the barrier half way across the space between the barrier and the front of the picture. A screen formed of a long strip of ground glass covered with white paper was placed in front of the jets, so as to cast its shadow upon the lower side of the gold frame, which, without this, was too glaring. The jets were inclined backwards. No doubt we shall soon have the idea utilized in the case of other pictures.

#### STRAY THOUGHTS SUGGESTED BY THE PHOTOGRAPHIC EXHIBITION OF 1874.

BY W. T. BOVEY.

ALTHOUGH photography no longer sparkles with the allurements of novelty, and familiarity with its products has, in some instances, transmuted former wonderment into something allied to contempt, its fascinating influence still clings to a host of ardent admirers, whose warm interest in the growth of the art finds vent in anxious enquiries relative to the progress it is making, as judged by an examination of the proofs now being exhibited in London. Does the exhibition, as a whole, give evidences of improvement? Is the mark of progression but doubtful, or is it unquestionably real? These and like queries rise uppermost in many a mind; therefore I need make no apologies for obtruding replies, more especially as I may conscientiously say yes to the first, again yes to the latter clause of the last interrogation. I cannot, certainly, point to anything sensational or startlingly original. There is an evenness which, in so decided a degree, I never witnessed before. The best men have not surpassed their former efforts; those who lingered in the rear are creeping slowly into the foremost ranks. The landscapes, as a rule, are more technically perfect; choice of subjects more artistic. Breadth of treatment has taken the place of former feeble



attempts to make things more pretty than real. In the place of those loud and badly selected skies once regarded as proper and fashionable, we notice that cloud subjects are thrust into their right places, and made subordinate to the remainder of the pictures, thus showing that photographers are gradually growing familiar with the rules of true art. If I were asked whether progress is more than moderately visible in any given direction, I would at once point to the Crawshaw prize heads and reply, "Yes: look you there! In lieu of those deep, heavy shadows, without transparency or detail; instead of those deserts of blank and broad patches, quite innocent of roundness and tone—defects too apparent in the large portrait work shown last year—we notice, in the present exhibition, faces so tenderly shaded that they steal softly from high light to shadow, and from shadow to high light again, without a perceptible break to show where either begins. Like elaborate mezzotint engravings, products of magical hands, these heads, as they hang in their frames, are proud examples of progress still going on. There is, however, more room for improvement: there is that something still wanting to awaken a semblance to life—that something which, absent, is missed by a critical eye. Those heads possess enough of technical perfection to credit their producers with gifts of remarkable talent. If genius would only give the last touches, tameness would give way, and there would be more of brilliancy and fire. I once heard Mr. Robierson define this missing something as an absence of "pluck." This explanation, though rough, has the merit of being intelligible.

It is none of my duty to give special attention to this or that picture. Each exhibitor, doubtless, did what he could to excel; and many, at their best, have in some respects failed. To such I would say, *nil desperandum*. You will show something more perfect next year. But what may we say of those gentlemen who once were so zealous and true? Their absence this year breeds suspicion that missed prizes, if not absolutely the cause of this absence, have with it a great deal to do. I much fear that prize giving is like to prove a serious step the wrong way, and if persevered with will ultimately bring destruction on our annual treat. Egotism, jealousy, suspicion—these have already combined to blind the judgment of those who have tried and have failed, hence the reason why that so many honoured names may not be found in the catalogue of the present exhibition.

As human nature now acts, I see important objections to money prizes, or even medals being given. Indeed, I might with propriety write either down obstacles in lieu of an actual gain. Some few years ago I advocated the founding of an art union in connection with photographic exhibitions. The subscription for members a guinea per year. Tickets for the drawings one shilling. Each winner of a prize to select for himself from the saleable pictures exhibiting. If the picture chosen be of greater value than the prize won fully pays for, the difference might easily be adjusted, and so on. To each subscriber of one guinea the privilege of choosing a picture should also be given, or pictures, if the prices should be under the guinea. And to meet the necessary working expenses a fixed per centage should be required of each exhibitor whose works may be thus sold. If this or some similar plan were adopted, every photographer would have some fair prospect of being paid for his trouble; but as long as money or medal prizes are given, these must necessarily work mischief on account of their reaching the hands of but a few. It might be argued that prizes in any shape must fall into the hands of our best men. Truly; but who may decide which is best? The balance is often made to kick the beam on both sides by variations of opinion and taste.

By the way, I noticed in some of the enlargements examples of those "ropy beards," of which mention was made in a letter that appeared among the "Notes and

Queries." I have recently spent some considerable time in examining, with the aid of a powerful microscope, the peculiar construction of beard hair. On comparing this description of hair with that plucked from the head, I was surprised on observing the difference in structure; for whilst the latter is tubular and smooth of surface throughout, the former, near the roots, looks even enough, but from thence it grows flatter and rougher, and becomes quite jagged and uneven as it is seen at its ends. Not only are the peculiarities I have described clearly apparent, but there is an absence of those tender gradations of light and shade which belong to a cylindrical formation; hence the reason that the light line and dark borders when distended in the process of enlarging produce that ropy or mat-like appearance of which there is good cause to complain.

There are several other very interesting topics on which I intended to touch, but these must stand over just now. The winter and leisure, however, will enable me to write on, at short intervals, until the material I have had in store for several months is spun out.

### WASHED EMULSION PROCESS.

BY EDMUND PHIPPS.\*

THE following are the details of the method I have adopted in working the modification of the emulsion process suggested by Mr. Bolton, whereby washing and the use of a preservative are dispensed with—a rough outline of which I gave you at our last meeting.

Prepare a plain collodion of five grains of powdery pyroxyline to the ounce of mixed solvents, and allow it to settle for at least a week; carefully decant the required quantity, and add to each ounce seven grains of bromide of ammonium, finely ground into a little alcohol (this grinding is necessary, as the salt is but sparingly soluble in alcohol); well shake at intervals for about three hours; then add for each ounce fourteen grains nitrate of silver dissolved in the usual way in a little distilled water and hot alcohol. The proper equivalent of silver for seven grains of bromide of ammonium (the equivalent of that salt being ninety-eight) is a trifle under twelve grains. It is, however, desirable to have an excess to ensure the action of the silver on the pyroxyline. Agitate well for at least a couple of hours, and filter the emulsion in a dish set perfectly level; allow the emulsion to remain until it is thoroughly set, the time, of course, varying with the quantity used, the size of the dish, and the temperature. It should remain until it is capable of bearing a moderate pressure of the finger without breaking. When set, break up the film with a broad strip of glass, and wash slightly with distilled water. Transfer the film into a wide-mouthed jar, and well wash with many changes of ordinary water, smashing up the film into small pieces to ensure the thorough removal of all soluble salts. When this has been accomplished, and the water comes off clear, decant or draw off as much of the water as practicable, and wash again in three or four changes of alcohol; the latter having a strong affinity for water sneaks it out of the broken film. Finally: dissolve in a mixture of ether and alcohol.

The alcohol used for washing need not be wasted; it can be filtered back for future use. The alcohol used for final solution had better be absolute, to counteract the effect of any water left in the film. Ten ounces of plain collodion treated in this manner will yield about twelve ounces of finished emulsion. I do not add tannin or any other organic matter to the emulsion. If an ammonium salt be used in the collodion any amount of intensity can be obtained with the alkaline developer, and there is nothing to gain in this direction by organifiers. In the experiments I have made, I always found that the plain emulsion yielded better negatives than an organified one.

\* A communication to the Liverpool Amateur Photographic Association.



There is every reason to believe that an emulsion so prepared possesses indefinite keeping qualities. The negatives I have here to-night were taken by an emulsion prepared in the manner I have described on the 12th of August last; the plates were prepared, exposed, and developed two or three days since. The emulsion is quite as good as when first prepared.

To prepare the plates, albumenise with dilute albumen (one to twenty of water), back with burnt sienna, and, when thoroughly dry, coat with the emulsion and set up to dry. The drying may be by heat or spontaneous; it makes little matter which method is adopted. The exposure is decidedly rapid. With a Ross's medium-angle doublet of seven inches equivalent focus, largest stop, and well-lighted landscape, forty seconds will be about the exposure. However, great latitude is allowable; for, by the method of preliminary treatment with pyro, it is possible to judge of the correctness or otherwise of the exposure with great accuracy before the real development begins.

To develop, pour over the film undiluted alcohol of average strength, wash well, and pour over a four-grain solution of pyro (see that there is no trace of alkali in it). Now carefully watch the plate. If properly exposed, the high lights and the secondary lights will appear in about half a minute. A very little experience will soon enable the operator to judge as to the exposure, and adapt his developer accordingly. Assuming the exposure has been correct, to a three-grain solution of pyro add one minim of a ten-grain solution of bromide of potassium, and one minim of dilute ammonia (one part of ammonia to eight of distilled water). Treat the plate with this until its power seems exhausted; then add another drop of the ammonia solution, then a drop of bromide and a drop of ammonia until the details are all out, and the plate sufficiently intense, no large addition of ammonia being made without bromide to check it. The first application of the alkaline developer must have a trace of bromide, or fog will ensue (see also an excellent method described in the *British Journal* for July 17). If, by the preliminary development, the plate appears to be under-exposed, use the strong alkaline developer; but be cautious not to push it too far, or the image may be over-intensified. If over-exposed, use an excess of bromide and very little ammonia, and, if necessary, intensify with acid silver; or, if much over-exposed, push the development with the plain pyro until all the details are out, and intensify with acid silver without using the alkaline developer at all. Intensification with silver will rarely be needed unless the plate be over-exposed. If it be, however, necessary, use it before the film is allowed to dry. The plates are also capable of being developed with iron, a wash of nitrate of silver solution being applied before the developer is used. Fix with hypo in the usual manner.

The numerous advantages of the process to a dry-plate worker, to amateurs especially, are so patent that any comment by me is unnecessary. I would only observe, that from the very nature of the process, it possesses in an extraordinary degree that quality which, of all others, is so essential in a dry process, namely, uniformity and certainty of result. I trust that others may be induced to experiment and make known their experience, with a view of rendering the process as perfect as possible.

### Correspondence.

#### RE-ESTABLISHMENT OF THE PHOTO. EXCHANGE CLUB.

SIR,—I have a number of large negatives, up to twenty inches, of Welsh and other scenery. I should like very much to exchange prints with some photographer upon the same terms as those framed by the members of the Exchange

Club in existence some few years ago. Could it not be re-established? I am sure by this time many amateurs would be glad to do the same.—Yours, &c.,  
EXCHANGE.

#### KENNETT'S PELLICLE.

SIR,—No doubt many of your readers will be glad to hear of any experiments with the above dry plate process, so without any further preamble I will state the result of my first attempt.

I felt perfectly satisfied with the results Mr. Kennett was kind enough to show me, both as regards the negatives, and prints taken from them. I was only anxious to test the "pellicle" for *rapidity*. I first took a group out of doors, in the middle of last month. The morning was not very bright, although the sun was shining through thin clouds. The lens used was Dallmeyer's No 2B, with No. 4 stop. I first exposed one of the "quickest commercial dry plates in the market," giving an exposure of three seconds for one picture, and five seconds for the other. I then exposed a plate coated with "Kennett's pellicle," allowing two seconds' exposure on each picture. These plates were developed the following day. The first named plate had not received sufficient exposure by a long way; eight to ten seconds would have been nearer the mark. The "pellicle" was amply exposed. On another occasion I tested the sensitized gelatino pellicle against a wet plate in my glass room, in which there is never such a flood of light as one commonly sees in most photographic studios. I gave ten seconds to the pellicle, and twenty-three seconds to the wet plate, using the same lens as before, with No. 2½ stop. Both negatives were sufficiently exposed.

I may add that on the same day that I took the photograph of the group out of doors, a friend of mine was taking negatives on the wet plate process, under similar circumstances, with a Ross's C.D.V. lens, 2½ stop, and that the exposure necessary was sixteen seconds.

A PORTRAIT PAINTER.

### Proceedings of Societies.

#### SOUTH LONDON PHOTOGRAPHIC SOCIETY. TECHNICAL MEETING.

THE technical meeting of this society, in accordance with announcement, was held in the Cambridge Hall, Newman Street, Oxford Street, on the evening of Thursday, the 29th ult., the Rev. F. F. STATHAM, M.A., in the chair, when a full attendance of members and visitors was present. After a few introductory remarks, explanatory of the purpose of the meeting, from the Chairman, the Secretary read the minutes of a former meeting, which were confirmed.

Mr. HUGHES then proposed a vote of thanks to Mr. Samuel Fry for his kind invitation to the members to visit his landscape studio at their open-air meeting, and for the handsome entertainment they received. The motion was carried by acclamation.

The following gentlemen were then elected members of the society:—Messrs. Tench, J. C. Heavyside, C. Ferneley, J. M. Nisbet, Prestwich, Herr Warnaeke, and Signor Fanchoni.

The CHAIRMAN read a letter from the Secretary of the Belgic Photographic Society at Brussels, enclosing the first two numbers of the *Bulletin* of the society.

Mr. W. T. BASHFORD sent a brief paper describing a simple method of generating sulphuretted hydrogen gas for reducing silver wastes, and exhibited the jar described (see p. 532).

Mr. HUGHES, in a few words, explained the action of the apparatus.

The CHAIRMAN suggested making the base of the jar wider and heavier, to prevent the risk of its being overturned, and so causing an escape of the offensive gas.

Mr. SENASTIAN DAVIS suggested the necessity of some method of securing escape for the gas as rapid as the generation, to prevent a similar risk.

A Member proposed that the chamber at the bottom of



beneath the sulphide of iron, should be larger, which would aid in preventing risk of escape of the gas.

A universal tripod stand, by W. H. Oakley, was exhibited and described by the Secretary as follows:—

"The top is triangle, and has three adjustable sliding legs, held firm by thumb-screws, which, by loosening, will allow the sliding legs to be set from the smallest possible adjustment or angle, and from three feet to five feet six inches high, and by tightening the screws is as firm when at its total height as when down (thus remedying the great fault in all other stands), and, being so easy of adjustment, will be found just the stand needed for out-door and indoor photography and exhibition, &c.

"It is invaluable for taking interiors on stone pavements, as they can be made rigid by tightening the thumb-screws, and when once set level will remain so; can be set to any height to suit the subject; and set level upon any uneven place—for instance, side of a hill, roof of a house, &c.; in fact, there are so many advantages, that a sight of the stand or drawing will show that it is just the stand needed.

"A ball and socket joint is also fitted, if required. Its advantages in many instances, for photography, &c., will be seen at a glance; the top can be set and held by the screw under triangle to any angle either way, or can be shifted round to follow up any passing object, &c., without moving stand.

"It has been used for taking views of ships in motion, and also the animals in the Zoological Gardens, and for such uses it will be seen to be of great service; thus, as the animals have to be taken just as they are, in a state of rest or ease, now the ball and socket arrangement will allow the camera to be shifted round as the animal moves from place to place, and when a moment still, the photo, taken. Also, as the ball and socket is made of box-wood and brass, and made to fit well, it will not allow the camera to slip unless the screw underneath is loosened.

"They are made in various sizes."

Mr. HUGHES, commenting on the conveniences and utility of the arrangement, remarked that the principle was an old friend, having been used by photographers five-and-twenty years ago.

Mr. TULLY, after asking the meaning of the word "copyright" appended to some prospectuses of the stand, wished to protest against the tendency to pooh-pooh inventions, and deny their novelty.

The CHAIRMAN thought Mr. Tully misunderstood the temper of the meeting. The very fact of such a meeting being held was proof of their wish to give publicity and credit to every invention. It was a simple matter of justice, however, to point out the fact of prior invention or discovery of a similar contrivance.

Mr. SAMUEL FRY exhibited a fifteen by twelve negative, produced on the afternoon of a dull day with a Dallmeyer 5D lens in forty seconds, the plate having had a preliminary exposure through opal glass of about ten or fifteen seconds. Without this treatment the necessary exposure would have been about three minutes. The principle of pre-lighting which he had before brought before the society had not, he thought, yet received sufficient attention or trial. He had noticed that, as a rule, those who had tried the principle, and failed in getting satisfactory results, had not carried out the principle properly, but had adopted some method different to that which gave success. In one case a gentleman who had failed, instead of placing opal glass in front of the lens, had placed it inside the camera in front of the plate. The plan by which he himself had succeeded consisted, as he had before explained, in having a cap for the lens, consisting of a wooden rim with a disk of opal glass. The plate being in, the camera received the light through this opal glass for a certain time, which must depend on circumstances, being carefully adapted to the character of the lens and of the light, and this could only be satisfactorily ascertained by trial and experience. If the plate fogged, the time of pre-lighting was too long; if no palpable advantages were gained, the time was too short. The same principles were in operation when a light background was used. He had found that on using a dark background a much longer exposure was necessary, whilst with a light background which reflected a certain amount of light into the camera, a good harmonious negative could be obtained with an exposure altogether insufficient when a dark background was employed.

In answer to a question as to the ratio of reduction in exposure on using the opal glass, Mr. Fry said that as a rule fully half the ordinary exposure might be given.

Mr. HUGHES asked if this were at the sacrifice of any brilliancy or excellence of any kind in the result.

Mr. FRY: There is no loss of any kind. If the time were properly adjusted, the negatives were in every way as perfect.

Mr. B. J. EDWARDS asked whether, in using a light background the advantage was due to the light reflected, or to the modified deposition of silver in development, the light background attracting more silver than the dark, and so preventing the risk of hardness.

Mr. FRY had not carefully examined that point, but believed it due to the light.

Mr. SAWYER said that at the Autotype Works they had tried pre-lighting in copying large pictures usually requiring from ten to twenty minutes' exposure. They had tried various times of preliminary exposure—five, ten, fifteen, twenty, twenty-five, and thirty seconds—and in every case where any result was perceptible at all, it consisted in more or less fog. Sometimes an apparent advantage, on examining the negative, was gained; but the best printing results were invariably obtained without the pre-lighting. In the matter of backgrounds, his own experience was, that where other things were equal, a dark background gave the best results.

Mr. FRY thought it quite possible that pre-lighting might be no advantage in copying. As regarded the background question, he could simply repeat that, after many comparative experiments, he had always found a light background give the best negative with the shortest exposure.

Mr. BLANCHARD had found that, under certain conditions, a decided advantage was gained by the preliminary exposure. It was a thing well known to old Daguerreotypists, and he had used it twenty years ago. He then proceeded to relate a conversation between himself and Mons. Adam-Salomon, and an experiment they tried in photographing a bronze and a marble statuette side by side. An exposure of five seconds gave an image in which the white had no detail in the lights, and the bronze none in the shadows. They tried again with the same exposure, then, closing the lens for a moment, removed the bronze statuette, and exposed for a few seconds against the background alone; the result, on developing, was an harmonious image of each. He had found the preliminary exposure of very great advantage in dull winter weather, whilst in the bright light of summer it seemed of no use. For use with slow lenses in bad light it was extremely valuable, and gave that quality which photographs often so much lacked, and which was of such art value—harmony in the picture.

The CHAIRMAN regretted that they had not time to pursue the discussion further at that time, but suggested that Mr. Blanchard should prepare a paper on the subject for a subsequent meeting.

Mr. B. J. EDWARDS showed some exceedingly perfect transparencies and enlarged negatives produced from them, and also read a brief account of a method of producing combined groups (see p. 582).

Mr. WERGE exhibited some fine negatives and prints illustrating the results of his method of producing pictorial effects on the backgrounds of old negatives by the "powder process," the details of which have been already placed before our readers. Mr. Werge also exhibited and explained the advantages of a shutter inside the camera for covering and uncovering the lens, instead of using the ordinary cap.

Mr. HUGHES said he had had a similar shutter in use for twelve years, and was surprised that portraitists should continue the use of the clumsy cap, the removal of which from the lens always distracted the attention of the sitter, and produced that rigid, unnatural look which came with the consciousness that the operation has begun, whilst a simple easy plan was available which was free from all the objections and drawbacks of the cap.

Mr. HUNTER showed a plate-box for conveniently carrying a store of plates or negatives.

Mr. WERGE exhibited and explained the action of Westou's Burnisher.

Mr. BERTIN exhibited a convenient filter for collodion, similar in principle to Maynard's collodion filter described in our volume for 1872. It permits collodion to be filtered without evaporation, the upper vessel being properly stopped, or corked, an india-rubber tube connecting the upper vessel with the lower vessel, so that the air displaced from the lower vessel passed into the upper vessel, and so maintained the flow of the collodion. He also exhibited a double filter, a space existing between the inner funnel and the outer funnel, by which the clogging and slow filtration often experienced was prevented.

Mr. BERTIN also exhibited a very clever and convenient adaptation of the old well-bath fixed in a cradle and ease with lid opening in front. The plate was placed on a ledge in the bath whilst in an upright or sloping position, the lid closed, and the bath tilted by means of the cradle, into the horizontal position, and so covered with the silvering solution.



The same gentleman also showed a simple and convenient method of fixing blotting-paper in the corners of the dark slide, a groove of about one-sixteenth of an inch or less wide, and an inch long, being provided at each corner, into which a piece of folded blotting-paper was placed and easily held firm.

Mr. HARRISON exhibited an arrangement for using an improvised paper dish for developing purposes. It consisted of four pieces of wood planed square, about a foot long, and an inch or less in each diameter. These were mitred at the corners so as to form a frame, and hinged with bits of string tied through three of the mitres, the fourth being fastened by an india-rubber band. A piece of paper being folded with edges turned up to form a dish, each corner was placed within the opening of the mitres, and the frame fastened with the india-rubber band, and these formed a perfectly firm dish. Waterproof paper might be used, and each dish thrown away when done with.

Mr. DAVIS spoke of the advantages for developing dry plates, there being no possible risk of lurking contamination in the corners, a constant risk with ordinary dishes carelessly washed.

Mr. HOWARD suggested using parchmentized paper, and

Mr. BLANCHARD suggested varnishing paper with a mixture of collodion and linseed oil, which he had found admirable for such purposes.

Mr. CUSSENS showed a convenient developing holder.

Mr. MILES showed a zinc plate-box with wire grooves.

Mr. ATTWOOD showed a convenient printing-frame.

Mr. KENNETT showed some negatives, transparencies, and prints, illustrating the working of his gelatine pellicle.

After some remarks by the Chairman and by Mr. Hughes, and a vote of thanks to the exhibitors and the chairman, the proceedings terminated.

#### LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

The monthly meeting of this Association was held on Tuesday, the 27th ult., at the Free Library, William Brown Street, the Rev. H. J. PALMER, in the chair.

The minutes of the former meeting were read and passed.

The CHAIRMAN handed round a number of fine negatives with their corresponding prints. The negatives were by Mr. Penny, of Cheltenham, on plates prepared with Mr. Kennett's gelatine pellicle. They were excellent examples of the capabilities and rapidity of the gelatine process, most of them having been taken with an exposure of five seconds and under. He also handed round some negatives of his own preparation by the same process. He (the Chairman) had (owing to the effects of the ether in collodion on his health) determined to abandon its use, and, if possible, work only with the gelatine process. For some time he had met with nothing but failures for which he could not account. He had, however, at last succeeded, and he could strongly recommend the process. One of the great causes of failure was that his plates were mostly fogged. He got rid of this by using two thicknesses of orange tissue paper over his orange dark-room window. Spots on the film were another cause of failure. These were avoided by taking care, in returning the excess from the plate to the bottle, to pour it down the side of the bottle, and not to allow any bubbles to remain on the coated plate. In coating, the film ran more easily and lay more evenly by first breathing on the plate. Taking care to follow the directions given by Mr. Kennett with each packet of pellicle, and keeping down the light (for the plates are exceedingly sensitive) he felt sure that anyone with care could succeed with them.

Mr. J. H. ELLERBECK handed round some sheets of coloured gelatine, which he found very useful in using in addition to his usual dark-room glass.

Mr. ATKINS exhibited a film negative, detached from the glass, and explained the advantages of being able to print from either side of the negative.

The Secretary read a letter from the President of the Belgian Photographic Association, and handed round the first and second number of the *Bulletin*, issued by that Association.

The CHAIRMAN said he was sure that the members would join with him in wishing success and prosperity to the new society, which, he was glad to see, had been formed in Belgium to extend the popularity of their delightful art.

Mr. E. PHIPPS then read a paper on the "Washed Emulsion Process" (see p. 536).

Mr. PHIPPS stated that he found the process was much more rapid than the ordinary bromide process. He usually allowed the plates to dry spontaneously. There was great latitude in exposure, and if it was expected that too long an exposure had been

given, it was advantageous to let the bromide of potassium and pyro developer soak well into the plate before adding the ammonia; indeed, sometimes the development could be obtained even without ammonia. It was also advisable, in case of re-developing after the plates had been dried, to first moisten the plate with spirit to thoroughly soften the film. Reference having been made to the use of ammonium bromide, he (Mr. Phipps) stated that with cadmium he was not able to get sufficient printing density, and it was only when he began to use ammonium first in conjunction with cadmium, and subsequently alone, that he obtained anything like a good negative; he was confirmed in his opinion of the value of ammonium by observing that Mr. Stillman, in his published formulæ in his handbook for amateurs, used bromide of ammonium only, to the exclusion of cadmium.

The meeting was shortly afterwards adjourned.

## Notes and Queries.

### PRELIMINARY LIGHTING.

DEAR SIR,—I have much pleasure in replying to the inquiry in your last whether I use the opal accelerator in my portrait work. I beg to say that during dull weather I never take a picture without. I had this day to take 12×10 portraits in a very bad light; but with twenty seconds' pre-lighting and seventy seconds' exposure very fine negatives were obtained. Convincing evidence was given of its value by the fact that having been forgotten for one picture, the result was a totally useless negative from under-exposure. Mr. Blanchard justly said, in reply to a query at the South London Technical Meeting, that "you may call it fog, or by any other name you like, but it is a good result."—I am, respectfully,

SAMUEL FRY.

### "SPECIMENS TO BE SENT."

SIR,—Can any of your readers suggest a remedy for an oft-repeated wrong? About a month ago I answered an advertisement which appeared in your journal with the usual announcement, "specimens to be sent." I complied with the request, and forwarded a pocket photographic specimen case, which has not been returned. Receiving no answer to the letters I sent for its return, I was induced to apply at the establishment where the advertisement came out, where they acquainted me with the address of the advertiser. I then made a personal application to him, when he informed me that the case had not been received, and that he was under the impression that his boy, in conveying it from that house to his own, must have lost it, which to my mind is not very clear, as the written application, which he admitted he received, was fixed securely to the case. Moreover, it seems very ungentlemanly on the part of an advertiser not to acknowledge the letters I addressed to him respecting it. I am not desirous of accusing anyone of wrong, but it does appear strange that after I left it at that establishment no clue can be given as to its whereabouts.—I am, sir, yours faithfully,

SPECIMENS.

Oxford Street, November 2nd.

### COMBINATION PRINTING.

DEAR SIR,—I am not going to say that I have Mr. Tilley's secret, or that the method I am writing of has not been written about before, but if it has, I have not seen it, which must be my excuse for taking up your time. The method is this. Take any negative, block out the parts not wanted, then take a transparency of it; with that and a transparency of background, take a negative, and you have all that is wanted.—Yours respectfully,

A LITTLE GUN IN THE PROVINCES.

## Talk in the Studio.

NEW PAPER ILLUSTRATED BY PHOTOGRAPHY.—It is stated that an illustrated paper is to appear at Christmas the engravings in which will be executed by a new phototypic



process recently invented in France. The process is similar in its principal features to those already known. The pencil sketch is photographed, transferred to stone, then retransferred to zinc, which is etched by means of acid. Artists often complain that their pictures are spoilt by the engraver; it will be strange indeed if they do not complain as bitterly of the new phototype.—*English Mechanic*.

**SURVEYING BY PHOTOGRAPHY.**—The *South London Press* says:—"A South Londoner has invented a new scheme for photographing so as to give a comprehensive view of a large estate, or a pitched army, ground plans, broad acres, &c. This process is to take the picture by what is known as the 'instantaneous' process, the camera being projected, face downwards, from the car of a balloon. Of course this can be done only when there is a very trifling horizontal movement in the atmosphere, and when the aerial vehicle has been brought almost to a stand, by the sufficient liberation of gas when at a suitable distance from the earth. For mapping and surveying, the process promises to be invaluable."

## To Correspondents.

**H. C. COGSWELL.**—Pyrogallic acid may be kept for some time in concentrated alcoholic solution, a portion of which can be added to water for use. 2. Portrait negatives may be intensified by means of permanganate of potash. We have produced very good results with portrait negatives, simply immersing them in a solution of about ten grains per ounce.

**K. (Madras).**—The opaque spots or patches which appear on the negatives you describe is probably metallic silver, caused by contact with a dirty inner frame, or by the use of a horny, repellent collodion, or some one of a series of causes by which such a defect may arise; but with such slight data we cannot say with certainty which cause is in operation. But care in keeping the inner frames perfectly clean, letting the plates rest on clean blotting-paper, will aid you much. A bath in good order, and preciseness and cleanliness in manipulation, are, of course, important. 2. In such a country as you describe short exposure will, of course, be necessary. A weak developer, say five or eight grains of the iron salt to an ounce of water, and twenty grains of acetic acid.

**H. SPINK.**—The general plan of the studio appears to be pretty good. We fear that you cannot, with advantage, work two sets of sitters at once; there is scarcely space. The total length being twenty-seven feet, thirteen feet six inches would not be long enough for each; nor would the seven feet of top and side-light be sufficient.

**GLACIAL.**—The red untinted spots in albumenized prints are generally due to contact with something of a greasy or fatty nature—soiled fingers and similar causes. Possibly your albumenized paper has been fingered or lying about.

**GREAVES.**—You have been very successful. The retouching is well done, and you just stop at the judicious limits. The great danger in retouching is in going too far. Avoid that, and your work will gain. The example you send is very satisfactory.

**NORWICH.**—Dr. Mann, whose name you find in connection with the Photographic Society, is the same gentleman who spent several years in Natal and South Africa. His address is 5, Kingsdown Villas, Wandsworth Common.

**T. B. MELLOW.**—Your lighting is much improved. There is still, perhaps, just a trace more front light than is desirable; that is, the side-light extends a little too much in front. A more concentrated direct light would give you a little more relief and solidity, without destroying delicacy.

**R. F.**—Collodion for enamelling the surface of prints should be thick and somewhat tough. Several makers prepare a collodion expressly for the purpose.

**A. BEGINNER.**—The most useful work on colouring photographs which we can recommend is "Newman's Manual of Harmonious Colouring as Applied to Photographs," Newman, Soho Square.

**R. F. M.**—Platinum has been occasionally used for toning silver prints on albumenized paper; it gives a good black tone, but it is not, on the whole, better than gold, or even so good. The chloride of platinum is very deliquescent, and generally contains a large proportion of free hydrochloric acid, which causes it to bleach unless it be neutralized. It is a good plan to add carbonate of soda sufficient to give a slightly alkaline reaction, and then add a sufficient trace of nitric acid to make it neutral.

**H. W. B.**—No. 4 is most under-exposed, and Nos. 3 and 7 would have been improved by fuller exposure. No. 5 has been sufficiently exposed, but the subject is not well lighted, and hence a certain flatness. No. 6 is a difficult subject, especially with the special condition of light; but we do not think longer exposure was required.

**R. M. K.**—You may easily sell your chloride of silver to a refiner, if you have a sufficient quantity to make it worth the trouble. You can either obtain cash, or nitrate of silver to the same value. 2. It is not worth the trouble to attempt to save the gold from wastes in small quantities.

**M. P. S.**—The legitimate use of certain initials after the name, to indicate fellowship with a learned society—such as F.R.S. (Fellow of the Royal Society), F.S.A. (Fellow of the Royal Society of Antiquaries), F.C.S. (Fellow of the Chemical Society)—is confined to societies possessing a royal charter. A member of the Photographic Society using such initials would be committing a foolish error. Members of the Society of Arts have no claim to the use of the letters F.S.A. The desirability of securing to photographers the means of acquiring a diploma, or a legitimate claim of some kind to the designate initials, is a wide question, upon which much might be said for and against. At present no such facilities exist.

**D. F.**—Winter landscape photography is not generally very satisfactory or pleasing, except where special effects of snow or hoar frost, &c., are secured.

**COMMERCIAL TYRO.**—We cannot with propriety recommend special artists.

**MOULDY MOUNTING SOLUTION.**—Your solution of gelatine and gum may be preserved from mouldiness by the addition of an essential oil—or, better still, by the addition of carbolic acid. A trace of carbolic acid prevents decomposition in albumen, gelatine, glue, and similar substances, and will also effectually preserve from any tendency to fermentation paste of wheat flour or starch; and it effects this without in any way altering the qualities of the material, or, like corrosive sublimate and similar agents formerly used for preserving paste, introducing anything injurious to the photograph. If a few drops of ten-grain solution of carbolic acid be added to paste or glue when prepared for use, no fear of change or putrefaction need be entertained, as it at once destroys the germs upon which fermentation and decomposition depend. If glue be used it should be tested at the outset for acidity, and a little ammonia added if any trace of acid be present. Most samples of glue and gelatine in the market are more or less acid; the only article of the kind which we have reason to believe to be free from acid is a fine sample of glue prepared by a special process by Bevingtons, of Bermondsey. Where it can be purchased retail we do not know. Acid mounting material is most dangerous to photographs.

**ANXIOUS.**—There is considerable difficulty in photographing a vase or vessel of any kind of polished silver. One plan which has been recommended, and removes many difficulties, consists in placing some ice or cold water in the vessel, and photographing it in a warm room; the cold inside makes the vessel condense vapour on its surface, and so lose its excessive brightness, and become easy to photograph. But then there is the disadvantage that the true surface texture is not rendered. Try placing it in a curved background of black velvet, which will protect it from a multitude of reflections, use a concentrated light, and give a moderately full exposure. After one or two trials, you will doubtless hit the best conditions.

**MINIATURE ARTIST.**—We cannot explain the admission of some examples of coloured work and the rejection of others, except by suggesting that those admitted were illustrative rather of the application of a photographic process than as examples of colouring. If you require fuller explanation you had better write to the Secretary. We cannot tell you anything as to the future distribution of prizes beyond stating that no decision affecting the future has been formed. The only decision was that it would not be desirable to give prizes this year.

**A. YOKEL.**—We do not remember where or when Mr. Hughes published an unfavourable report on intensifying with permanganate of potash. We remember his observations on the defects of Selles process, using ferrideyanide of potassium and persulphate of uranium; but nothing as to permanganate. The latter has doubtless escaped our observation. The results in our hands have been satisfactory. A rich brown deposit is obtained, of very non-acidic quality. We regard all such methods, however, as useful only in exceptional cases. As a rule, sufficient intensity can be obtained with the iron developer.

**N.**—The stains on the print are due to what are called "tear-drops." The silver solution, instead of drying off the sensitized paper in an even wave, has collected in drops. The use of a somewhat weaker bath, partially blotting off the excess of solution, using the paper not quite so dry before sensitizing, or removing the tear-drops with blotting-paper the moment they begin to form, will prevent the stains.

**A. G. GRANT.**—Should the Exchange Club be re-established, you will doubtless be able to effect exchanges of the kind you wish.

**HONESTE AUDAX.**—We will see that the needful steps are taken in Captain Abney's absence.

(Several Correspondents in our next.)



**The Photographic News, November 13, 1874.****PHOTOGRAPHY IN AND OUT OF THE STUDIO.****ROPY BEARDS—RECENT RESEARCHES UPON THE BROMIDE AND IODIDE OF SILVER—DETECTION BY PHOTOGRAPHY.**

*Ropy Beards.*—Some remarks which have recently been made upon the blurred and ropy character of beards when reproduced by photography has led us to give some attention to the question. It is generally in the enlarging process that the abnormal state of the beard becomes most evident, as those who have essayed the production of large portraits of bearded models can testify. In the first place, our readers may not know that a hair from the beard is generally about three times as thick as that from the top of the head. In three pairs of specimens, plucked from the heads and beards of different patients, we found this to be the case, an object glass of quarter-inch focus clearly demonstrating the fact. Moreover, we found that with a moderate amount of light reflected upwards in the microscope all three samples of beard hair proved more or less transparent; while of those from the head, two were transparent and one—from a curly, black-haired patient—was opaque. The beard hair from the latter individual was, we repeat, in some degree transparent, and acted, like the other transparent ones, as a condenser of light when a beam of strong light was reflected upon it. It is a difficult matter to focus a hair sharply under the microscope, by reason of this ray of condensed light that runs the length of it; in fact, owing to its thickness, it never is all of it in absolute focus, and the blurring and widening of the object that takes place if the instrument is not properly focussed is known to all who have ever seen these capillary tubes under the microscope. The very coarse nature of the beard, then, compared with the hair on one's head at once hints at a reason why a large portion is rendered ropy; for any strong light falling on it is sure to be condensed in the same way precisely as if it fell upon a number of lenses, and these cause over-exposure—or what photographers call solarization—and blurring of the parts; and a little blurring or unsharpness in focussing in the original is, of course, much exaggerated in an enlargement. Pretty well the same thing happens in preparing carbon enlargements when one is not altogether *au fait* at the work. If a transparency formed of pigmented gelatine upon glass is put up against the light to be enlarged, it will be found that many of the lines and points are rendered on the focussing glass by broad streaks of light—the lines of a cottage roof, for example, appearing covered with snow. The effect is owing simply to the deposit of thicknesses of gelatine in these parts acting like a lens, and condensing the light, so that scarcely a sharp line can be obtained anywhere. Like the thick hair in a sitter's beard, certain lines in the picture are rendered coarse and solarised. In the production of carbon enlargements the difficulty is easily overcome by screening the transparency from direct light, and breaking it up and diffusing it by means of a ground glass diaphragm or other simple method. But to photograph a beard without its being rendered thick and ropy in parts is a problem not so easy of solution.

*Recent Researches upon the Bromide and Iodide of Silver.*—An interesting research upon the chloride and bromide of silver has been reported to the Royal Academy of Belgium by M. J. S. Stas, which includes several matters of importance to photographers. The details of his experiments with the chloride are published in the *Annales de Chimie*, and those on the bromide will follow in the next number. We will on an early occasion place before our readers such portions of the research as relate to photographic matter, and we have reason to believe that the remarks relating to bromide of silver will be especially interesting. M. Stas has carefully considered the changes brought about by

heat in the solubility of chloride of silver, and especially the influence of alkaline nitrates upon it. He has also given information upon methods of dissolving the chloride by means of nitrate of mercury, acetate of mercury, the alkaline acetates, and in a mixture of mercuric and sodic acetate.

*Detection by Photography.*—To use photography as a detective is not a new application of the art, and it is surprising what aid it may afford in recording facts which are not otherwise manifest to the eye. We do not here allude to the great spectroscopic discoveries that have been made from time to time with the assistance of the camera and sensitive plate, where lines have been recorded in photographic impressions of which no vestige could be seen by observers employing but ordinary means of vision. These discoveries have been made for the most part in the violet and ultra-violet portions of the spectrum, and since Dr. Vogel's discovery that by tinting a bromide film it may be made permanently sensitive to any section pretty well of the spectrum, we may hope to find out still more by photography by examining successively all portions of the solar spectrum in the same way as Draper, Rutherford, and others have investigated and added to our knowledge of the most refrangible portion. But it is not in its scientific bearing that we just now referred to photography as a detective, but rather as an aid in ordinary every-day life. Some time ago M. Gobert, who has charge of the photographic establishment attached to the Bank of France, communicated the fact that photography often assisted him in reading erasures upon cheques. If, for instance, one number had been scratched out and another written over it, the sensitive plate would tell him the word or figure that had been erased; for what appeared sufficiently removed to escape the eye usually proved quite clear enough to give an image in the camera. The photographer may become, therefore, an important witness in this sense, for any erasure or abrasion of the smooth surface of the sheet of paper upon which a document has been written, however neatly the scratching out may be managed, will produce a result upon the plate that cannot be gainsayed. A simple experiment will prove how sharp is the eye of the camera. Take a carte-de-visite that has fallen out of a letter, and which bears faint traces of writing upon its surface resulting from contact with the inside of the note; it bears, perhaps, but the faintest of marks, so that the picture may be placed in an album without reserve. But put it upon a screen and copy it, and the writing which is altogether illegible upon the original may be easily read upon the plate. A good deal has been done by paper makers to prevent cheques being copied by photographers, and all sorts of colours and water-marks are used; but we should not be surprised if one of the best safeguards against reproduction by photography would be the disposal of the fibre or glaze of the paper in different ways over the surface of the cheque, so that a photograph of the same would surely show patches just the same as if there had been erasures in certain plates, and the surface of the paper roughened in parts. Partial hot-pressing with metallic plates would, perhaps answer the purpose; to the naked eye the cheque would appear white and smooth throughout, and it would be only on copying in the camera that the surface-markings would become apparent.

**FRENCH CORRESPONDENCE.**

**LEON VIDAL'S POLYCHROMIC PROCESS—DUCOS DU HAURON'S EXPERIMENTS—THE REFLECTOSCOPE PHOTOGRAPHIQUE—ENLARGEMENTS FROM OPAQUE PICTURES.**

The first meeting of the Photographic Society of France, held this season on the 6th inst., will certainly be marked in the annals of the Society as one of the most interesting and numerous of its gatherings.

In the first place, I have to note the presentation, in the



name of M. Leon Vidal, of a large collection of new specimens by his process of photographic polyehromy. These were the feature of the evening, and I do not hesitate to say that they created as much surprise as admiration. It required one to have a large amount of confidence in M. Leon Vidal to be assured that the charming little paintings he has produced were not the result of artistic painting with a brush.

As he tells us in the note which accompanies his specimens, M. Leon Vidal has been engaged in perfecting his process ever since the moment he published it. He has applied himself to the simplification of the operations so as to render the method applicable to industrial purposes, and to allow of the pictures being produced at a moderate cost, so that the price might not exceed by more than a third the publishing cost of ordinary photographs produced by the usual methods of printing. His researches were especially devoted to the question of the relative value of photographic clichés, and to the modification of the negatives without the aid of a brush or a screen of ground glass. He models by means of photography those tints which he desires to bring back to their relative value in the same way as the light modelled the original cliché. It is well known that negatives such as are usually obtained do not reproduce nature truthfully in all its tints, the colours not being rendered according to their relative value. Green, yellow, red, and brown act upon iodide or bromide of silver with less intensity than the violet, the blue, and the white rays. M. Vidal has essayed to modify the clichés so as to produce them in the same condition as if the less refrangible colours had acted with the same relative power as violet, blue, and white.

In the pictures which he has sent to the Photographic Society, M. Vidal has attempted to reproduce objects of various kinds. Thus his collection contains several portraits, a bouquet of flowers, a flower by itself, a porcelain lamp (bronze and glass), ladies' handkerchiefs of various colours, a steam-engine, &c. Now as in the various pictures all the tints are reproduced from the most intense to the most delicate, every object is rendered with its colours finely modelled. Gold, bronze, brass, and iron have each of them their characteristic colours. In the steam-engine there are four different metals represented, each perfectly distinct from the other. Thus it will be seen that the process of polyehromy may be applied in every way to the reproduction of all sorts of works of art and industry. A cursory glance at the portraits and flowers will demonstrate numberless details, and show how precisely the author must have reproduced the different monochromes; in the bouquet, for instance, there are countless sprigs of all kinds, and yet the juxtaposition of the colours is as exact as the clearness of the lines are perfect. All the pictures, M. Vidal tells us, were obtained by the most simple means, and in such a practical and rapid manner that the number of copies is simply controlled by the number of monochromes that the clichés can severally yield. With the Woodbury press, or that of the Ober-netter, or any other mechanical method, the yield of prints would be considerably augmented.

One important circumstance may be chronicled, viz., that with six or seven successive impressions M. Vidal is able to obtain much more complete results than those produced by means of chromo-lithography with twenty or twenty-five prints.

It need scarcely be said that there are no colours that are ill adapted to reproduction by this process: the most varied tints may be copied, and exact facsimiles thus secured. Neither do the dimensions limit one in any way, for enlarged portraits—as also the tiniest images—may be obtained by its means. We repeat that these paintings traced by light have been unanimously admired; and, on comparing the present examples with the earlier productions, we can only ask how it is possible that so much progress could have been made in so short a time.

At the close of the meeting the question was asked us, if M. Vidal would consent to receive pupils? "He will do more," was our reply, "for he is now preparing a manual, illustrated by numberless specimens, and which will contain such precise details that a perusal of it will permit of others doing the work as perfectly as he does it himself."

On his side, M. Ducos du Hauron presented, through his correspondent at Paris, M. Andoin, a specimen, of which I spoke in my last letter; at the same time he forwarded another memoir on the subject, of which I recently gave the chief points. It was possible to see, therefore, how far he, too, had progressed in photoehromy. But most attractive of all were the experiments of Mr. Geymet, of which I have also spoken, and which confirm, in the most positive manner, the theory of M. Ducos du Hauron.

After several other communications of less interest, and to which I shall possibly return, M. Van Tenac presented to the Society his *Reflectoroscope Photographique*, the use of which he demonstrated before the members. The object of the instrument is to give enlargements of opaque objects just as well as transparent ones. One of the main points in the apparatus is the employment of an artificial light of some kind for supplying the illumination for the enlarging lens in such a way that all the rays of light are utilised. The image in this way acquires the maximum of illumination which the source of light can afford, the clearness being still further augmented by the use of a diaphragm in the lens. The power of the apparatus is such that, under ordinary circumstances, it is possible in a few seconds to secure an enlargement life-size from a carte portrait with a magnesium lamp of one ribbon. Even an oil lamp may be employed for the purpose, and this will furnish likewise very good clichés.

The apparatus, which is of but small dimensions, may be placed upon an ordinary table. It is composed of three distinct parts: the first is for condensing the light, as I said in a former letter on the subject, having in the interior a mirror of silver or speculum metal, which possesses a particular curve, and in the focus of this is placed the lamp. The second portion is for the projection of opaque objects, and is formed of a cylinder or trunk-like cone, placed at 45° at a certain distance from the condenser. In this is fitted a door where the object to be enlarged is placed; perpendicularly and *vis-a-vis* to the centre of the door is fixed the tube with the lens. The third portion is for the enlargement of transparent clichés; it is formed of a cylinder or trunk-like cone, or of an ordinary camera fitted on one side with a frame for placing the clichés, with a lens on the opposite one, having its axis coincident with that of the condenser. A chimney where the supply of air is provided, a tube for conducting the smoke out of the apparatus, and a case in which it is fitted, completes the whole affair.

To obtain an enlarged photographic impression of an opaque carte-de-visite, or of a transparent cliché, the manipulation of the apparatus is very simple. After having fixed the object to be enlarged in its proper place, the top portion of the apparatus is turned in such a way that the enlarged image is projected on to the screen; the screen and the object are then in the same parallel, and the lamp is introduced into the instrument, and the image is focussed, the dimensions being controlled by moving the screen to and fro, and adjusting the lens. After having prepared the sensitized plate, or sheet of paper, this is put into its place upon the screen. The magnesium is then set fire to, the other lamp which has served for focussing having been withdrawn. The period of exposure varies according to the importance of the enlargement, and according to whether the object is opaque or the transparency clear or dull; it varies, also, with the quality of the lens and with the diameter of the diaphragm employed.

M. Hermann, who daily employs this apparatus, made the



following remarks upon its merits:—"This new instrument is an improvement upon the different enlarging instruments used up to the present day. The possibility of obtaining direct an enlargement from a carte-de-visite, without, in the first place, having to secure a small negative, is a most important matter, for almost always a great deal of half-tone is lost in the ordinary process of copying; moreover, the light and shadows become exaggerated, and the likeness, in this way, is often lost. It is only necessary to glance at the direct enlargement of a carte-de-visite upon the screen of the *reflectoscope* to be convinced of the fineness and delicacy that are obtainable. Another important point is, that one is not dependant on daylight for carrying on one's work."

The employment of magnesium has never been employed in such a practical manner as in the present apparatus, by reason of the difficulty of getting rid of the dense fumes which obscure the condenser after the lapse of a few moments. This difficulty has been altogether overcome by an exit established above the apparatus, while drafts properly conducted suffice to remove the smoke entirely from the chamber, and allow the magnesium wire to burn regularly.

The extreme rapidity of the operations upon collodion render it unnecessary to pay any attention to the cost of the illumination. With a very transparent positive, a few seconds only are necessary to obtain a head of life-size. The whole of the light is then made use of, and clichés are secured of the clearest and densest character.

The experiments made at the meeting by M. Van Tenac were completely successful, and quite confirmed the flattering remarks made upon the occasion by MM. Hermann et Andra, both of whom spoke enthusiastically in praise of the new instrument.

ERNEST LACAN.

## Correspondence.

### IMPROVED TRIPOD STAND.

DEAR SIR,—I hoped that I might render some slight service to my kind photographic friends, and my brethren generally, when I wrote the letter which appeared in your issue of the 18th September last, as regards my "legs".

Imagine my disappointment (not to use a stronger term) when I find in your paper, received on Saturday last, that a Mr. Oakley has exhibited at the South London meeting a tripod, with some talk of "copyright" on the part of Mr. Tully, which as nearly as possible corresponds with mine, which (mine) have been in use for the last two years, as everybody knows who is connected with me. Every one of the photographs exhibited by me in the Suffolk Street Exhibition just closed was taken on the top of that stand, besides scores of others, though it has been altered slightly and improved since my return to England.

I heard from London a fortnight since that some one was making legs like mine, and saying they were his invention, but I did not hear any name. My desire was, if any benefit could be derived from my ideas, that all should be benefited. I took my original tripod to Mr. Morley, of Islington, to improve for me, and to be a guide for the taller set which I named in my former letter to you on this subject; and the description read by the Secretary before the South London Society is so extremely like a description of my own legs, that I cannot help thinking some one must have borrowed an idea.

How I came to invent the tripod is as follows. My instructor in photography, Signor Guidi, of Sanremo, had two sets of tripods of French make, which have two screws to raise or lower each leg and fix them; and the inconvenience of the complication at once struck me.

I bought a set of the ordinary doubling up legs, and a carpenter (by name Asquasciati) at Sanremo, by conversion, made me those which I have ever since used, which have only one screw.

The slippery pavements, the top of Milan Cathedral, and many other difficult positions, disgusted me with the ordinary triangle top, and I adopted the French arrangement, with screws at the heads of the legs, rendering them non-collapsing.

Far be it from me to claim anything to which I am not entitled, though the adaptation may be my own. When I was in Venice I met Mr. Norman, one of Mr. Frith's operators. From him I got the idea of raising the camera so as to be out of the reach of the peering people, &c. He had a heavy ordinary (not doubling up) tripod, and had ingeniously joined to it an additional joint to each leg hinged at the bottom, so that he could let it down or put it up as he found convenient; but it was, I thought, *very heavy*. I saw no difficulty in lengthening my tripod, according to my own plan, so as to answer the same purpose, perhaps even more conveniently, and this, I believe, has proved the case.

There is another point on which I must trouble you, viz., "the ball and socket joint" of Mr. Oakley and others. I think that action is not adapted for taking panoramic views or moving objects with the greatest facility. If the arrangement on the top of my legs be properly constructed, the camera can be turned completely round "without the possibility of any change of plane," and no re-levelling or re-focussing is requisite. It is not a ball and socket, but a levelled block turning in a socket.

I send you my original legs as improved, so that you may judge for yourself. If you look up by the side of the spike when closed up you will see a small brass female screw let into the leg, through which the fixing screw works. This, though a trifle, is important, because without it I found the wood soon worn away with constant use.

As Mr. Morley has asked the loan of my tripod in order that he may take patterns of the brass work, I shall write to him to say that I have sent it to you, and that he can send for it when you have done with it.—I am, dear sir, yours faithfully,

T. G. A. PARKYNS.

Catherston Manor, near Charmouth, Dorset.

[The legs forwarded to us by Sir Thomas Parkyns undoubtedly possess the convenient extending arrangement which was the especial advantage in those described at the South London meeting; the chief difference being that our correspondent's admit of more extension.—Ed.]

### TRADE PUFFS IN THE SOCIETY.

SIR,—Will you allow me, as a very old member of the Photographic Society, to protest against the growing tendency, which is manifest, to use the papers read before the members as vehicles for advertising the wares of various manufacturers: the use of Mr. So-and-So's collodion, the lenses of Mr. Some-one-else, and the camera and various other articles by Messrs. *Les Autres*. At one time a distinct understanding existed that all such allusions should be eliminated from papers, either by the council or its secretary, and our presidents of old were prompt to suppress undue shoppiness in the discussions. *Mais nous avons change tout cela*, and there is some danger of the Society losing its scientific interest altogether, and degenerating into a trade organization; and its meetings into occasions for the feeblest possible talk on the most trivial possible points belonging to the duties of an operator's assistant—a kind of thing which on Tuesday night I regretted much to see approved, and as much as possible prolonged by the chairman. Surely we might expect from the president, who, it was anticipated, would look so well after science in the society, something better than this.—Yours truly,

N. L.

[The tendency to trade allusion, of which our correspondent complains undoubtedly seemed manifest on Tuesday evening. Some degree of inexperience in various quarters may possibly explain the circumstance. When the Society and officers get fairly settled to their work after late disorganization, all this will doubtless be put right.—Ed.]



## COLLODIO-BROMIDE EMULSION.

SIR,—All photographers who practise dry-plate processes must feel indebted to Mr. Phipps for his generous publication of what appears to be an admirable mode of preparing collodio-bromide. Nothing can be simpler than preparing plates with such an emulsion.

In the hope that a further improvement—an economical one—may be made in compounding the emulsion, I venture to suggest that the plan of evaporating the solvents to obtain the film in a state fit for washing appears to be somewhat wasteful. Is it not possible to prepare the bromide of silver washed with water and subsequently with alcohol, to free it from the soluble salts, and then form an emulsion by adding it to the collodion? The mixture being mechanical, the complete suspension of the particles of bromide of silver may possibly be accomplished without the waste I have referred to.

R. T. J.

[The addition of bromide of silver, prepared before-hand, to the collodion has been practised; but there is some difficulty in preparing in this way an emulsion without tendency to subsidence. We shall be glad to publish the experiences of any experimentalist.—Ed.]

## WEST RIDING OF YORKSHIRE PHOTOGRAPHIC SOCIETY.

SIR,—The preliminary meeting for giving the above Society a veritable existence will take place on Monday, the 16th inst., at 7 p.m., at "New Inn," opposite Town Hall, Bradford.

I had to settle upon some central position in Bradford, and the above was thought the most convenient as an initiatory step until private rooms could be obtained.

This explanation is perhaps necessary to the Good Templars who may be found amongst the intended members.—Very truly yours,

J. W. GOUIN.

Akroydon, November 10th.

## PHOTOGRAPHIC IRRADIATION.

CONTINUING the discussion on this subject, Mr. John Aitken wrote, some time ago, in *Nature*:—

"I hope you will allow me space to correct a slight misunderstanding which has got into the present discussion on photographic irradiation. Mr. Crofts places my views in opposition to those of Lord Lindsay and Mr. Ranyard. Mr. Stillman, who has given us such valuable information on the molecular condition of different preparations of collodion, also takes the same view. Now, in reality, Lord Lindsay's and Mr. Ranyard's views are not opposed to mine. I have simply attempted to prove that molecular reflection was a cause of photographic irradiation, not that it was the only cause, as I quite agree with Lord Lindsay and Mr. Ranyard, that the imperfections of the lens are also causes of photographic irradiation, and in *Nature*, vol. x. p. 185, I pointed out one form of irradiation due to the lens. But the imperfection of the lens which is most fatal is that pointed out by Lord Lindsay and Mr. Ranyard, namely, the inability of the lens to bring all the rays to a focus, whether this results from the imperfections of the outside portion of the lens, or from imperfect achromatic\* correction. No maker of lenses will tell you that any lens, far less that every lens which he puts out, is perfectly corrected for dispersion. Working with such an instrument, it is very clear that if we only allow an exposure sufficient to give an image on the part of the collodion where the great proportion of the rays are focussed, then the photographic impression will give very nearly the true boundary line. But suppose we allow more light to pass

through the lens, either by turning the camera to a brighter light or by giving a longer exposure, then it is clear that the unfocussed rays, which gave no impression when the exposure was short, will now impress themselves on the collodion, and thus the photographic impression will be extended beyond the true boundary line. That there should be difference of results in experiments on photographic irradiation is quite to be expected, as there are so many variables in the experiments. The light, temperature, and condition of the collodion are all constantly changing, and the conditions under which the experimenters work, and the apparatus and chemicals used, are different for each experimenter; different results may therefore be expected. If the experimenter use a good lens, and employ only the central portion of it, the imperfection due to the lens may be small in quantity; but if his lens is imperfectly shaped and badly corrected for dispersion, and he uses the full aperture, the result will be very different. Again, if the experimenter work with different collodions, Mr. Stillman has shown that, altogether independent of the lens, a very slight change in the preparation of the collodion greatly alters the amount of irradiation. So far as I can at present judge, the imperfections of the lens and molecular reflection are not opponents, but allied enemies, which we must meet on the same field."

Writing to the same paper, a week or so since, from Florence, Mr. A. Cowper Ranyard makes the following reply to the above:—

"I shall be obliged if you will allow me space to state more specifically why I am not able to concur in the irradiation theory of Mr. Aitken (vol. x. p. 439). I understand from his last letter that he fully agrees with Lord Lindsay and myself as to the cause of the outer irradiation, and our only difference of opinion now lies in the amount of the inner irradiation that can be traced as due to what he has termed molecular reflection within the thickness of the collodion film. Mr. Aitken and Capt. Abney both appear to consider this as the chief cause of the inner irradiation fringe, while I am disposed to rank the irradiation arising from the optical imperfections of the instrument with which the photograph is taken, together with any irradiation that may arise in the wet plate processes from circulation in the film of fluid covering the plate, before, or as very much greater in amount than the irradiation due to dispersion within the collodion film.

"We should expect that light dispersed within the thickness of the collodion film would produce its photographic effect in all directions round the illuminated point, and that the area of action would not be affected—or certainly would not be decreased—by covering the front surface of the portions of the collodion film adjacent to the directly illuminated area with an opaque object. Indeed, if the opaque object were a good reflector—such as a bright piece of platinum foil—we might expect slightly to increase the area of photographic action due to dispersion within the film; for the light dispersed towards the front surface of the film would be in great measure reflected back into the thickness of the collodion. But, as I have shown in former letters, placing a piece of platinum foil in immediate contact with the collodion film causes the photographic image of a bright object to be sharply cut off, and no perceptible irradiation can be traced under the edge of the foil.

"Again, we should expect the action of dispersed light to extend further within a thick film of collodion than within a thin film; for there would be a greater thickness of illuminated collodion, and the angle through which light could be radiated directly upon the adjacent area without suffering reflection at either surface would be increased, but I have not been able to detect any perceptible difference in the amount of irradiation of similarly exposed plates coated with four thicknesses of collodion and in those coated with but one film.

"I have felt myself, therefore, driven to look for the cause of irradiation either in some circulation taking place within the film of liquid covering the collodion at the time of exposure, which film would be interrupted and its tension greatly altered by the contact of a solid body; or else to seek its explanation in the optical imperfections of the photographic instrument. Possibly, in the wet plate processes, circulation within the fluid film may produce a very sensible effect. Indeed, there are phenomena which make this more than probable. When a wet plate picture of a strong light projected upon a dark background is taken with a decided over-exposure of say ten minutes or a quarter of an hour, the inner irradiation fringe is seen to

\* We here require some new word, or we must greatly extend our conception of achromatism, as we have here to deal with rays far beyond the limits of the sensitiveness of the eye; and the word achromatic, as applied to lenses for chemical purposes, is somewhat misleading. I may here offer two suggestions as to how the imperfect power of the lens to bring all the different rays to a focus may be partially corrected:—(1) By using a collodion which is as nearly as possible only sensitive to those rays which the lens can bring to a focus; or (2) by providing each lens used for making accurate observations with a screen, which shall stop back all the rays beyond the limits which the lens can focus.



be most opaque on its outer edge; and the phenomenon is so marked that it cannot be held to be an effect of contrast. This, of course, should not be the case if the irradiation edge were due merely to the optical imperfections of the instrument. Again, in the small negatives of the eclipse of December, 1871, taken at Dodabetta and Baikul, there is a decided structure in the irradiation under the prominences: under the brightest of them it can be distinctly seen that the opacity of the irradiation fringe is greatest along lines radiating from the prominences; while along the outside—that is, furthest from the prominences—there is an arc of slightly greater intensity. The same structure is traceable in all the negatives, but it is most marked in the Baikul series, and especially in those negatives in which the prominences are most exposed, viz., on the east and west limbs, at the beginning and at the end of totality. This, of course, cannot be accounted for merely by the optical imperfection theory. Again, the little brushes mentioned in a former letter as extending under the edge of the platinum foil cannot be accounted for without supposing that there is circulation within the liquid film. I hope on my return to England to carry out some further experiments for determining the amount of the inner irradiation which in the wet-plate processes may be due to such circulation."

## THE PRACTICAL PRINTER IN AMERICA.

### XIII.

*Filling of the Frames.*—The simple process of filling the frames, as far as *teaching* it is concerned, is often very much neglected by the photographer in learning his apprentice to print.

This neglect on the part of his teacher of photography instils into the mind of the inexperienced printer a disregard of the importance of this mechanical operation, and thus quite often blunders, mistakes, and breakages of negatives occur, which is called *foolishness, heedlessness, &c.*, by the photographer, and his apprentice is quite often *cursed* by him for his stupidity. The apprentice is of course somewhat to blame, but the photographer, unless he has fully shown the danger which would arise from not being careful in filling, is *equally* to blame, at least for the first or second accident.

When a young man first commences to print, he should *then* be taught the carefulness required in filling the frames, and in hopes that this chapter may arrest the eye of the young beginner, I have attempted to show in what respects carefulness is required.

I have said that this carefulness should be instilled into the mind of the young beginner when he *first* commences to print. There is an old saying, "It is hard to learn an old dog new tricks" and although your printer may not be an *old dog*, yet it is applied to beings possessing more intelligence equally as well.

When a printer has learned to print carelessly, then it is very hard to learn him carefulness, and consequently such a printer will always be making mistakes all his life, however experienced at printing he may be. Such is partly the reason why every person who contemplates learning the photographic art should learn in a gallery where good work is done, for in learning how to make good work, *carefulness* is also learned, which is always a necessary accompaniment. Now, the placing of the negative in or on the printing-frames is not altogether the *simplest* thing in the world, and in placing it in to print, please remember that glass is quite brittle, and that it does not take much to break it, and very often in letting the glass fall in the frames, after having placed one end in, causes it to break, on account of some slight flaw along the edges.

For this reason the negatives, before they are even retouched, should have the edges cut *clean*, providing they are not already so, as then there will not be so much danger of their cracking from uneven cutting.

The negative, if it be a trifle large, should *never* be forced into the frames to save a little trouble in cutting it, for they can never be forced into place, and either the frame or the negative will have to give way to the pressure, and

the negative will most likely be the one. If the negative is a little short or narrow, or both, then a clean glass of the same size as the bed of the printing-frame should be placed in it, and the negative on top of it. Then if anything give way, it will be the plain glass. It is always better in printing from negatives as large as 8 by 10, or larger, to have an extra glass in the frame.

The dusting of the negative, to remove any dust that may have settled on it, should be accomplished by a wide, soft blender of camel's hair. To dust the negative, *never* lay the flat side of the brush *horizontally* to the negative, and then draw it along, for a great proportion of the dust will stick to the negative; but the brush should be held *perpendicular* to it, and the tips of the hair used briskly.

Dust the negative two or three times, and immediately after dusting place your paper on it before the dust settles again.

In placing the paper on, many printers spoil their prints by not placing it up high enough on the negative, and then again by placing it too high.

Paper with metal and albumen spots on it can be very often saved, when the albumen spots are not too large, by placing that part of the paper containing the spots on the deepest shadow parts of the negatives.

In placing paper on vignette negatives, choose the *very* best, and never place paper on them that has the *water-mark* on it.

In printing such paper on any other negative, always have the water-mark on the darkest side of the background. As a rule, always place the imperfections of the paper—when you think that it can be saved—on the negative so that they will come in *all cases* either in the hair, draperies if dark, or in the shadow parts of the negative.

After placing the paper on the negatives, a cloth or two should be placed in. The reason why the cloths should be placed next to the paper is because better contact is secured thereby between the negative and paper. These cloths or pads should consist of white cotton flannel, unnaped side out—i. e., next to the paper—as the other side often causes imperfect contact between the negative and paper.

They are sometimes glued to the back of the board (i. e., the backboards), and then they do not need more than a single pad in the frame. When there is another glass in the frame, do not use more than *one* pad, as the pressure of the backboard will be too strong for safety to the glass. Instead of cloth pads, thick blotting-paper may be placed next to the sensitive paper, and the cloths next to them.

There has, within two or three years, a novelty appeared of fuming these pads very strongly, and placing them on the negatives, and thus fume the paper while printing. It is said by some to be very beneficial to the paper.

When fuming-pads are to be used, they should be fumed all night in a perfectly air-tight fuming box, and then after they are used once, they should be placed back again and kept there while the fresh pads, which are removed from the box, are used. On placing the pads on the paper, look to see whether there is any dirt on them, and whether there is anything on them that will spoil the paper.

If there are any tacks on the bench where the pads are laid down they are apt to stick to the cloth, and if they are not examined closely, and shaken before they are placed on the back of the paper, they will eventually break the negatives. In laying the backboards with cloths glued to them down on the bench, *never* lay the cloth side down, but always up.

After printing the first print, look closely at it, to see whether there is perfect contact in all parts of it.

In adjusting the pressure, always have it as *gentle* and *even* as possible, as strong and uneven pressure endangers the negative. Clean the back of the negative with a woollen rag, wet with a little common alcohol, before placing it out to print.



# The Photographic News.

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## PROPERTY IN PORTRAIT NEGATIVES.

THE question, To whom does a portrait negative belong? is again brought before the public by the press, and in a manner which illustrates the shallow and nebulous notions which prevail on such subjects, even amongst those who undertake to decide upon them *ex cathedra*. A distinguished artist and photographer, who is beloved and esteemed throughout the profession, has recently, we regret to say, through a serious break-down in his health, been compelled to relinquish the active pursuit of his profession. Having a large stock of portrait negatives, the majority of them as valuable as works of art as they are as portraits, he resolved to afford the families of the original sitters an opportunity of acquiring the negatives, rather than permit them, in the possible sale of his effects, to pass into hands beyond his control. To this end he issued a circular addressed to his customers, offering the negatives for which they had sat, on special terms. This circular, possessing rather the character of a private letter than a public document, we should not have felt it right to publish here, had it not already been printed, with misappreciative comment, in an evening journal. We reproduce it for the purpose of explanation, and comment on the general question. The circular runs as follows:—

London, Sept., 1874.

Mr. R—— presents his compliments to Miss ——, and begs to intimate that, owing to the accumulation of portrait negatives in his studio, he is compelled to dispose of them, and is induced to offer for sale the negatives of the members of your family from whom he has had the honour of sittings. Mr. R—— feels that in all cases when an artist allows a portrait negative to pass out of his hands, the sitter or the family become the proper custodian, in order to avoid such of the negatives passing into other hands, and so becoming lost sight of, or even misused. Negatives are unfading. He therefore now offers them at a very low price, in order that they may pass into proper hands. These negatives in most cases have given much satisfaction, and in many instances possess a pictorial interest independent of that belonging to the mere question of likeness. They can, of course, be printed from at any time, by any photographer, and they permit also of the production of enlarged or diminished copies, which may be finished by any artistic method. The negatives belonging to your family Mr. R—— offers at £1 1s. each, or £2 2s. for three plates; cards at 10s. 6d. each, or 21s. for three. An early answer will oblige, in view of other arrangements.—I remain, &c.

This circular, relating so essentially to a matter between the photographer and each customer to whom it was addressed, appears to an evening journalist fraught with some degree of public peril, as involving a "blackmailing element" which he should be "sorry to think was viewed with favour by photographers generally." As the real object of the circular was to offer a privilege, rather than to levy blackmail, and to provide an escape from the contingent evil of the negatives passing into irresponsible hands, the photographer wrote an explanatory letter to the journal in question, which it has not, so far as we are

aware, yet published. After explaining that he was suffering from a long lingering illness, he added:—"If I die this winter, my negatives and photographic stock-in-trade would be disposed of somehow beyond my control. Now I have given a chance to those who wish to preserve the negatives in their own safe keeping, to do so at a small price, for many of them are worth a good deal." He adds:—"There might be another contingency. Suppose I could not pay my rent, my landlord would come in and seize my stock, and the sale would then be very promiscuous." This explanation might possibly be quite sufficient to remove the misconception of the evening journalist; but a weekly satirical paper is more unreasonably severe, and, as a consequence, less likely to disquiet the public. He says:—

A well-known photographer is notifying his patrons by circular that, owing to the accumulation of negatives in his studio, he is obliged to dispose of them by sale; and in order to prevent them from coming into the hands of persons who might make an improper use of them—of course, he would not do such a thing—he offers them to those who sat for them at a stated price, which, by the way, is a rather high one. It does not seem to have occurred to this simple-minded creature that the danger from which he is so anxious to protect his customers might be more easily averted by merely destroying the negatives instead of selling them to their owners. Indeed, those unfortunates might be shielded with reasonable effectiveness by receiving back their property free of charge. Probably, however, the good man is about to go out of the business—after this he will find that course greatly to his advantage—and in the hurry of winding up his affairs has mislaid his honesty. It would ruin a thief to find it.

The offensive remarks as to mislaid honesty may be passed by in the assurance that it would not have been made with a fuller knowledge and understanding of the circumstances. The simple question to be decided is, whether a photographer is guilty of unfair practice in offering to sell his negatives to the original sitters to avert the probable contingency of their distribution by sale into various, and, possibly, unscrupulous hands. The provisions of the Copyright Act are very ambiguous in relation to the copyright in portraits commissioned in the ordinary practice of the profession. It is doubtful whether, according to the terms of the Act, any copyright accrues to any one in such portraits; but it is held by some who have carefully considered the question that the copyright becomes the property of the sitter. But in either case there can be no ground for pretending that the negative is the property of the sitter, any more than the lithographic stone upon which a design is printed by a lithographer to the order of a customer. The contract between the photographer and his sitter is in all cases for a certain number of portraits, and, these supplied and paid for, the contract is completed. The negative is an intermediate necessary aid in the producing the portraits: it belongs to the photographer, and, of course, remains in his hands. No respectable photographer, no matter what may be his estimate of the provisions of the copyright law, would dream of printing from such negatives to the order of any one but the original sitter or his legitimate representatives; but the possession and preservation of a stock of such negatives become a valuable property as securing a connection for further orders. Whilst the photographer continues in the business, himself the custodian of his negatives, no difficulty need arise; but if from any cause a transfer of his stock become necessary, possible troubles commence. In the voluntary sale of a stock of negatives most respectable photographers will have some regard to the probable trustworthiness of the purchaser who is to become custodian of the portrait negatives of his sitters; but he cannot have absolute certainty unless he made conditions which would hamper the sale, and which as a matter of fact no one ever dreams of making. In the case of death or seizure by a landlord, the sale would be, as the photographer above quoted remarks, of a "very promiscuous" character. It appears, then, that the only absolutely safe, fair, and unchallenge-



able method of disposing of negatives consists in offering them to the original sitters, who have a contingent interest in them. The suggestion that the photographer should hand over such negatives to his sitters, on the assumption that they are their property, is of course out of the question. The negatives are not the property of the sitter, who neither ordered nor paid for negatives any more than they paid for cameras. They ordered portraits, received them, and, we hope, paid for them; but, except to be assured that they are not misused to their disadvantage, have no rights of ownership in them. The other alternative which our weekly contemporary suggests—destroying them—is certainly within the power of the photographer; but besides the absurd improbability that he should destroy many hundreds of pounds worth of valuable property, he would be guilty, in many cases, of an act of vandalism which nothing could justify. In many cases, as in that immediately under attention, the negatives are very noble works of art, which it would be iconoclasm of the most deplorable kind to destroy them. In many cases they would be portraits of the beloved dead, and the loss would be beyond repair. In either case the sitters and their families have a strong interest in the preservation of such negatives, and there exists scarcely one of them, we will venture to assert, who does not regard the opportunity of securing the negative from destruction, or straying, a boon for which to be grateful, rather than as impost of black mail which they must pay to avoid a more objectionable annoyance.

A revision of the law of copyright could scarcely settle the proprietorship of the negative, as, unless its cession to the sitter were involved in the contract and recognised in the purchase money, the indisputable investiture of the copyright in the sitter would not necessarily carry with it the ownership of the negative; and if, by any rearrangement of the understood contract between the photographer and his sitter, the negative passed into the custody of the latter, he would find it a most troublesome charge, its final injury or destruction being, in nine cases out of ten, almost inevitable. Further, such an arrangement would, beyond a question, lead to an increase of cost or a falling off in quality. Most photographers of artistic ability spend more thought and care upon producing a portrait negative than are paid for in the immediate commission, because they regard that negative as involving reputation and future income. If it pass out of the first artist's hands to be printed in future by one beyond his control, his hope of future income is at an end, whilst, so far from gaining reputation, he may absolutely suffer loss if his name be associated with the negative, from the carelessness or incapacity of some incompetent printer, into whose hands his negative has been placed to produce cheap copies.

#### THE PRESS ESTIMATE OF THE EXHIBITION.

AMONGST photographers the estimate of the general excellence of an exhibition will vary very much, depending on the special subjects of interest in which each is concerned. With one, progress in the art would be illustrated by a good display of landscapes; whilst another would augur ill for the general advancement if the portraiture were poor or commonplace. The triumph of dry processes would represent the millennium of the art to some; whilst to others it would seem "in a parlous state" so long as the practice of permanent printing was the exception, and not the rule, amongst photographers. Whatever may be the special views of photographers themselves, they are generally interested in ascertaining what are the views of intelligent outsiders upon their annual exhibitions; and this they may, to some extent, ascertain from the criticisms of the press at large when they condescend to notice the display of photographs. Assuming that this work were always done by capable art critics, their deliverances should be very instructive, and photographers might at least defer

to their judgment as to how far artistic progress kept pace amongst the fraternity with the steps of technical improvement. Unfortunately, it happens that such authoritative value cannot be attached to these criticisms. The critics are apt to run in grooves, and to feel it safe to praise either acknowledged success, or that which certain schools consider success. The rule of criticism in such matters continues very much of the character which Goldsmith set down the Vicar of Wakefield, included in the simple formula, "Praise Pietro Perrugino, and say that the picture would have been better if the painter had taken more pains." But whilst some of the criticisms on the present exhibition are hasty, superficial, inappreciative, or even misappreciative, there is still often much to be learnt from them by the thoughtful photographer.

The fullest, and probably the best, daily press notice appeared in a journal from which least might have been expected, the *Morning Advertiser*, the organ of the Licensed Victuallers. It will be read with interest, but does not demand especial comment. The brief notice of the *Daily News* was little more than an indication of the existence of the exhibition. The *Observer* was more critical. Dealing with the larger pictures in the Crawshaw competition, the writer had some very just remarks on the painful character of a life-size literal transcript of the human face, which is nothing more than a transcript. "We cannot but feel," the writer says, "that the nearer is the approach made to imitative perfection, the more obvious and marked is the distinction between this art and that of painting in its nobler and more intellectual form. There is apt to be something almost painful in a large life-sized reproduction of human features; and we seem to lose the expression of a face, as we do that of a natural scene, while we are engaged in tracing the fidelity of transfer of every detail. The further we descend into particulars the more do we feel the want of that artistic spirit of order which marshals the facts of a subject, and so presents them to the mind of the spectator as to convey to him the same impression that the facts themselves have conveyed to the mind of the artist." All the force of these remarks is manifestly directed against such pictures in the form of untouched photography, without the softening, harmonizing touches of the artist, beyond a question necessary in photographs of this size. Referring to the resources available to the photographer for ameliorating photographic crudities, the writer commends Mrs. Cameron's alleged practice of placing the sitter out of focus so as to secure the general effect of light and shadow rather than a perfect rendering of a perfect texture of the skin. The device in question has its valuable uses, but is surely a fault rather than a virtue where it is applied to all faces, and so loses the delicate and sweet texture of the skin of the young beauty, as well as the rugose or wrinkled texture of skin to which time or nature has been less indulgent. For a judicious application of this device we might refer the reader to some of Mr. Blanchard's pictures. Where the skin is of fine texture it is finely rendered; but where, as in the portrait of an eminent tragedian, the face is deeply pitted with small pox, the merciless sunlight is not brought to focus on the skin: it is just sufficiently near focus to give the generalized suggestion of texture, without rendering every scar with minute literalness; but there is nothing smudgy or fuzzy in the general result, as there is in many of the pictures of the lady in question. The *Observer* thinks it fortunate that there are no more "composition pictures," which "are apt to be a weak kind of masquerading and sham sentiment, as in Mrs. Cameron's 'King Henry,' and the 'Children playing at saying prayers for their father at sea.'" It is a device as unfair as it is stale, to measure a thing by its failures. In the best examples of photographic composition the critic sees no suggestion of masquerading, and is apt to accept the result as a copy of a painting.

Mrs. Cameron exercises the critics considerably. The



*Standard* assigns her portraits the highest place, for the very odd reason that they most resemble something they are not. He does not judge them from an independent standpoint, and test them by the legitimate standard of their truth to nature, without violating the canons of art; but likes them because "they best realize the style of the best painters," and call to mind "pictures of the old schools." The excellences of the best painters, in so far as they consist of fine composition, arrangement, and light and shade, are qualities desirable in all forms of portraiture; but the realization of the special qualities of a master, such as roughness of handling, broad, sketchy, or suggestive treatment, rather than minute, perfectly made out work, is opposed to the whole genius of photography; and the imitation of the accidental qualities, such as the loss of detail and general deterioration through the destructive action of time, is surely a fault of a grave kind. The phrase used by the critic, we believe, precisely indicates the cause and character of the defect in Mrs. Cameron's work. She imitates the style of painters past and present, and the pictures of the old masters rather than nature; and, with much undeniable artistic quality, her pictures are too often far short of what, with a truer standard in her mind, she would make them. The critics, who have for a long time flattered Mrs. Cameron, often seeing artistic profundity where there was only confusion, have begun to tire of the slovenliness of execution, accidental or intentional. The *Times*, in speaking of the portrait (fine in many respects) of Miss Bateman, to which the line from Tennyson, "Urania speaks with darkened brow," is attached, says:—"The aptness of the quotation cannot be denied, for the brow of Urania is so remarkably dark that it is with difficulty we can separate it from the background of flowing hair and the overhanging boughs beneath which Urania stands. Distinctness is surely one of the first essentials in a photograph. In large breadths of landscape and composition pictures this is a quality undoubtedly difficult of attainment with the camera, but we confess we should not be inclined to allow this excuse to portraiture. The colour in which photography appeals to the eye is not in itself pleasing, though, of course, this is far less apparent in some instances than in others; but when to this unavoidable defect is added a slovenliness of execution (whether from accident or design), then, we submit, the photograph is lacking in one of the first requisites of good photography. There is apparently a growing tendency towards this style of work among amateurs, which we fail to notice among their professional brethren, and it is on this hint we venture to speak."

We scarcely think that there would be many followers of this style; but we have devoted more space than is, perhaps, necessary to point its error, because many of these pictures have received much indiscriminating praise on the ground that they resembled old masters, and this praise might tempt other students into the same path. The glory of photography is, that it can render with a truth, delicacy, and minuteness, details beyond the skill of the painter to realize; and to forego these special qualities, and emulate others in which it must at best produce second-rate imitations, is a folly which will not, we hope, find many disciples amongst earnest photographic students.

The *Times* critic is generally appreciative and just to the pictures in Suffolk Street, and the review which appeared in our last was doubtless read with interest.

#### MR. STILLMAN'S COLLODIO-BROMIDE POWDER.

REFERRING to the preparation of collodio-bromide of silver in a dry powder for keeping, analogous to Mr. Kennett's pellicle, we find in *Anthony's Bulletin* the following details:—

"Without recounting the different modes of working and compounding emulsions, we will content ourselves

with stating that Mr. Stillman, after making his emulsion, dries it, removes from it all free nitrate of silver and all other soluble substances which might act prejudicially to the keeping qualities of the plates, and then reduces the material to a powder. This is put up in light-tight bottles, and can be sent everywhere by mail. For use this powder must be dissolved at the rate of seventeen grains to an ounce, of a proper mixture of ether and alcohol. Albumenized glass, being already prepared, is coated with the above solution in the ordinary way (in a dark room, of course), the plates stood up to dry, and that is all. When dry they are ready for use, the person about to use them having been perfectly relieved from all trouble with silver bath, all trouble from washing, from all mess and inconvenience. The plates keep, with proper care, any length of time, and may, as we think, be developed at any time after exposure.

"Mr. Stillman is very enthusiastic upon the subject of photography, and has come to this country with the purpose of introducing this new article to our young men, anticipating for his favourite pursuit a great and gratifying extension, by thus eliminating from the practice of dry plate photography most of its unattractive details."

### Proceedings of Societies.

#### PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

THE first meeting of the session of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, the 10th inst., Mr. J. SPILLER, F.C.S., in the chair. The minutes of a former meeting having been read and confirmed, the following gentlemen were elected members of the Society:—Sir Thomas G. A. Parkyns, Messrs. H. J. Burton, F. H. Chaffin, J. Hawke, J. C. Heaviside, D. L. Mundy, J. W. Smith, W. Street, H. P. Swaine, E. Viles, A. W. Wilson, F. M. Sutcliffe, A. Ford Smith, J. M. Young, R. C. Murray, V. Heath, J. S. Catford, W. Nicholson, C. Ferranti.

The CHAIRMAN congratulated the members on the excellence and success of the exhibition just closed, and added that, in addition to its other advantages, he thought it might be credited with directly or indirectly obtaining for the Society the nineteen new members whose names had been proposed. From various causes of delay and hurry, the first catalogue did not contain all the names; but the second edition contained the names of 103 exhibitors. Altogether he thought that in the holding of an exhibition they carried out a very important function of the Society.

Mr. SEBASTIAN DAVIS, as Treasurer, stated that the complete accounts of the Exhibition were not yet ready, but he might state, in general terms, that the receipts had been £55 14s., and that the expenses would not exceed that sum by more than from £20 to £25; so that the total cost to the Society for admission for members and their friends, and the catalogues distributed, would not exceed £25, a sum he thought well spent.

Mr. CHAMBERS wished for one or two explanations in connection with the Exhibition. The conditions, in the absence of any precise statements, were, it was understood, the same as in the preceding year; he wished to know how it was that certain coloured pictures were accepted. There were also frames of cards and cabinet pictures which were not in accordance with the conditions of last year, no abandonment of which had been published, and were still presumably in existence.

The CHAIRMAN explained that the coloured work, being in a frame with other interesting work, got admitted to some extent by accident; but, in truth, no conditions had been published.

Mr. WALTER BIRD said that the absence of conditions was an undoubted inconvenience. His own firm had been put to serious inconvenience by preparing contributions which they found were not admissible. He thought in future such conditions should be made quite clear.

The SECRETARY said that this year everything had been left in the hands of the hanging committee, who had used their own discretion.

After some further conversation on the subject,

Mr. B. J. EDWARDS asked if the circular of the Society, referring to the Crawshaw prizes, accurately stated the conditions. He believed that one prize was awarded wrongly if the announcement issued by the Society was correct, as the conditions in that announcement were not the same as those upon which he understood the awards had been made.



The SECRETARY said that he issued the circular by request of the President, and the conditions were copied from a back number of the Society's Journal. He was not aware that these conditions had been altered, and an error in dimensions of faces having occurred in the circular, Mr. Pritchard, in a letter to the News, corrected it, and he understood him that in other respects it was correct. Mr. Pritchard also thought the matter of small importance, as the issue of the circular was too late to affect the production of competing pictures. He had, however, sent out post cards, and taken other means to correct the error in dimensions.

Mr. EDWARDS said if the circular was correct in stating that worked-up prints would be disqualified, he wished to express his protest against one award.

The SECRETARY said that this was a question altogether for Mr. Crawshaw and his jury. The Society had no control in the matter whatever, and not even official knowledge of the results.

Mr. JOHN CHAFFIN read a paper on the production of life-size heads, which will appear in our next.

After some conversation,

Mr. HOOPER asked if the lens used had any arrangement for diffusion of focus, as the pictures seemed to possess great depth of definition; and he wished to ask the distance between the lens and sitter. He regretted that he had not, in writing to Mr. Chaffin to read a paper, also asked him to bring one of the negatives with him.

Mr. CHAFFIN said the lens had no arrangement to produce diffusion of focus, but it had no very sharp focus anywhere, and was well suited for large heads. The distance between lens and sitter, so far as he remembered, was about four feet, and as in one case the size—seven inches—was larger than life, the distance between lens and plate was still greater.

Mr. EDWARDS, in answer to the Chairman, said the developer referred to by Mr. Chaffin was one which he had already published, consisting of sulphate and ammonia-sulphate of iron and a little copper salt.

Mr. CHAFFIN, in answer to a question, said he used gelatine in preference to albumen for a preliminary coating, because the latter was supposed to injure the bath. He found it recommended in one of the YEAR-BOOKS.

Mr. HART said albumen and gelatine, being colloid substances, could not reach the bath if the plate were properly covered with collodion, and none of the preliminary coating extended to the edges or back.

Mr. H. P. ROBINSON said as the mention of manufacturers' names had been freely introduced, he might, without impropriety, suggest to Mr. Chaffin that if he used one of Dallmeyer's 7 or 8D lenses he would be able very materially to reduce the time of sitting. He would find them much more rapid than the lens he described.

Mr. CHAFFIN had seen one of these lenses used in Hull, and the exposure was longer than his own.

Mr. ROBINSON said in his hands the exposure was very much less than that mentioned by Mr. Chaffin. He never thought of giving more than twenty or thirty seconds.

After a vote of thanks to Mr. Chaffin,

Mr. E. VILES read a paper on "Photography away from Home," which will appear in our next.

Mr. BLANCHARD pointed out that where negatives were intensified with iodine, pyrogallol acid, and silver, they were apt, during long printing, to become exceedingly dense and hard, from the action of light on the iodide of silver formed.

Mr. S. FRY referred to the undoubted advantages of the albumen substratum where it was fairly tried, the chief error of those who failed being, he believed, that they used too much albumen. As to iodine, he had used it for years. Negatives taken abroad had a little of the iodine solution poured over them, and if, on examination at home, they were found to need more intensity, they were simply placed in the light for half-an-hour. For washing plates and washing prints, on first removing them from the fixing bath as well, he found nothing so good as a very fine watering rose.

Mr. B. J. EDWARDS had tried the albumen substratum carefully, but with no good results whatever.

Mr. W. T. WILKINSON had used the albumen substratum for five years, and would not like to give it up. It saved trouble, gave cleaner results, and avoided all risk of losing the film. He used the white of one egg to sixty ounces of water.

Mr. CHAFFIN thought a common cause of failure in using preliminary coatings was not taking care that this coating was quite dry. If the plate were held before the fire, even when it appeared dry, it would often be seen that there had been some moisture.

Mr. WILKINSON, in outdoor work, always carried a spirit lamp to dry the plates before coating.

Mr. BEDFORD, in reply to the Chair, said he had never tried preliminary coatings, nor wooden baths lined with india-rubber. He generally used a glass bath, but had used ebonite without any disadvantage.

Mr. HOWARD had used ebonite for five years without trouble. When the surface got rough, or cracked-looking, a piece of sharpening stone easily rubbed it smooth. He had not succeeded with a substratum; specks, spots, and stains resulting from its use.

A MEMBER suggested that most of the troubles resulted from not using fresh eggs.

Mr. SYDNEY SMYTH used albumen with perfect success. He adopted a plan of coating recommended by Mr. Swan in the YEAR-BOOK, which he found the best method.

Mr. WERGE thought the best plan was to apply the albumen solution whilst the plate was wet. A solution containing the white of one egg, with thirty ounces of water, applied so, practically gave a coating like a solution with one egg in sixty ounces, and saved much trouble.

Mr. DAVIS powered a little on the plate, and spread it with a glass rod.

Mr. VILES said at one time he objected to the preliminary coating, but on one occasion the film of a beautiful negative floating off as he washed it, he resolved to conquer the difficulties of applying a preliminary coating. He had tried all the plans he had just heard recommended; but none he thought so easy and so efficient as the use of the Blanchard brush, applying the thinnest possible coating.

After a vote of thanks to Mr. Viles, and the reading of a letter from the new Belgium Society, the proceedings terminated.

#### EDINBURGH PHOTOGRAPHIC SOCIETY.

The fifteenth annual general meeting of this Society was held in the Hall, 5, St. Andrew Square, on Wednesday evening, the 4th inst., Mr. JAMES ROSS, Vice-President, in the chair.

The minutes of last general and previous ordinary meetings were read and passed, and Messrs. Wm. Nisbet, James Livingston, John Dick, John Eno, Robert Russell, and Charles Moxou were admitted ordinary members.

The SECRETARY then read the following report:—

*Report of the Council of the Edinburgh Photographic Society for the Year ending November, 1874.*

"In presenting this, the fourteenth Annual Report, your Council have much pleasure in congratulating you on the continued prosperity of the Society. During the past year the Society has maintained its character as one of the most energetic and useful institutions in connection with photography.

"During the year there have been held nine ordinary meetings, six outdoor meetings, and five popular evenings; all of which were well attended, and were characterised by fully more than the average amount of enthusiasm and usefulness.

"At the ordinary meetings the following papers were read:—

1. 'Experiences in Outdoor Photography,' by Sergeant-Major Perry.
2. 'Progressive Results of the Past Session,' by Dr. J. Nicol.
3. 'Action of Nitrate of Baryta on the Nitrate Bath,' by Mr. Tunny (two communications).
4. 'On the Preparation of Permanent Sensitized Paper,' by Mr. Turnbull.
5. 'Improved Lamp for Sciopticon,' by Mr. Turnbull.
6. 'On Polarized Light,' by Dr. J. Nicol, illustrated by Mr. Gilmour.
7. 'First Notes of some Experiments upon the Effect of Sunlight on the Colours of Pigments, with Introductory Remarks on the Propriety of Photographic Societies Discussing Artistic Questions,' by Mr. R. H. Bow.
8. 'Landscape Photography: Its Pleasure and Profits,' by Mr. W. Neilson.
9. 'Remarks on Dry Plates, with Special Reference to Lieut. Abney's Beer Process,' by Mr. W. H. Davies.
10. 'Spirit of the Journals' (two communications), by Mr. W. H. Davies.
11. 'On the Beer and Albumen Process,' by Mr. Turnbull.
12. 'Result of Experiments with Dry Plates Fumed with Ammonia,' by Mr. W. H. Davies.

"The five popular meetings consisted of—1. 'Demerara and Its People,' lecturer, Dr. Nicol. 2. 'Series of Views in North Wales,' lecturer, Dr. Nicol. 3. 'India: Its People, Scenery, and Antiquities,' by Dr. Iluter. 4. 'Series of Views of American Scenery,' by Mr. W. H. Davies. 5. 'China and the Chinese,' by Mr. J. Thomson.

"The outdoor meetings were held at—1. Winton Castle. 2. Ravelston. 3. Ainsfield Park, Haddington. 4. East Linton, Hailes Castle, Whittinghame, and Biel House. 5. Collinton Glen and neighbourhood. 6. A second visit to Ravelston.

"It will thus be seen that the Society has shown its usual



amount of vitality, and done a good share of thoroughly practical work. During the year the Society has been subjected to the usual fluctuation in the number of its members, there having seceded from its ranks thirty, and been added to the roll seventy-four, leaving a present membership of two hundred; and seventy-seven, showing an increase of forty-four members; the number being last year two hundred and thirty-three. From the Treasurer's Report it will be seen that the financial position of the Society is not, apparently, in a very satisfactory position. For this there are two reasons. First, it has been a custom since the commencement of the Society to let the accounts that were not rendered till after the general meeting in November lie over till the succeeding session. This informality your Council consider wrong in principle, and have therefore included the whole liabilities of the Society up to date. Secondly, there has been a considerable exceptional outlay for apparatus, &c., in connection with the popular evenings, which, of course, will not occur again for many years; and they have every confidence that the report of next year will show that the Society is in a healthy and prosperous condition.

"The following donations have been received during the year, viz.:—From Messrs. Polton and Son, of London, seventy-four photographs. From Serjeant-Major Perry, six photographs. From Captain Horatio Ross, a carbon enlargement of a study of dead game. From Mr. John Murray Gartshore, of Ravelston, five volumes photographic journals; also a handsome book-case in carved oak, a portion of the library at Ravelston, supposed to have been designed by Sir W. Scott. From the family of the late James Wood, an original copy of Rejlander's celebrated picture of the 'Two Ways of Life.' From Mr. Henderson, of Montreal, thirteen photographs. From Mr. Yerbury, two photographs of Biel House.

"Arrangements have been made for a series of popular evenings, which your Council believe will meet with general approval; and they confidently anticipate that the future of the Society will at least equal its past.

(Signed)

"R. G. MUIR, President.

"C. SINCLAIR, Hon. Sec."

The TREASURER also read his financial statement, and explained at length that the apparent shortcoming in the funds arose from the alteration of the termination of the financial year, and an exceptional outlay for apparatus, &c., for the popular evenings.

Mr. DOBIE, in moving the approval of both the reports, spoke of the good the Society had already done, but urged the members generally to greater efforts in furnishing matter for the ordinary meetings, as he felt quite sure that if every one would only do his duty in that direction, the usefulness of the Society would be much increased.

The reports were unanimously approved.

The meeting then proceeded to elect the following office-bearers:—*President*—Dr. John Thomson. *Vice-President*—R. H. Bow. *Treasurer*—Thomas Pringle. *Hon. Secretary*—E. R. Yerbury, 3, Hanover Street. *Corresponding Secretary*—Dr. John Nicol, 4, Dundas Street. *Auditor*—A. T. Niven. *Lecturer*—Dr. John Nicol. Members of Council in room of those retiring by rotation—R. G. Muir, Alexander Matheson, David Aird, John Bashford, and James Howie, Jun.

On the motion of Mr. DAVIES, seconded by Mr. PANTON, it was resolved that in future candidates for admission as ordinary members be required to deposit with the Secretary the amount of their annual subscription, along with their application, such deposit to be returned in case of non-election.

Dr. THOMSON, in thanking the members for his election to the office of President, said:—

"Gentlemen,—I rise to thank you for the honourable position in which you have placed me, by your votes this evening, as President of the Society; and my thanks are all the more sincere and heartfelt on account of the handsome manner in which you have conferred that honour, having been unanimous in your election. But whilst I thus thank you, I cannot at the same time congratulate you on the choice which you have made, for I feel, and very painfully too, my own unfitness for the office, and I am persuaded that you might have made a much better selection from among the other members of the Society. When I look around me I could point out several, who are men of talent, with refined taste and cultivated intellect, and who combine with these qualifications an ease, grace, and pleasantness in giving expression to their thoughts, with the happy knack of being able to throw in a touch of humour on fitting occasions, so as to soften the hardness and rigidity attendant on scientific discussion; just as the photographer can, by an experienced and artful touch, soften down

his picture when the contrast of light and shade is too strongly marked. These members have also an intimate acquaintance with photographic literature, and possess an extensive knowledge of those sciences on which are based the principles of our beautiful art, as well as show great manipulative skill and dexterity in working out the details of the various practical processes. But the choice has been made, and it now rests with us to make the best of a bad job. On my part I promise to place myself entirely at the service of the Society; and I hope that with the co-operation of, and the assistance which I expect to receive from, the able staff of office-bearers (who are really the working men) we shall be able to pull through the ensuing year. I am the more encouraged to hope for this favourable result from the experience I acquired when attending your meetings last session. I had then the satisfaction and gratification of witnessing that your general business and discussions were conducted in a quiet, orderly, and gentlemanly manner, giving no occasion for the interference of the President, but rendering his office almost a sinecure. I hope that there may be as little reason for action on my part during the session on which we have entered. And now, gentlemen, I have to request a favour of you, and that is, that all of you put forth a strong effort to advance the progress of our favourite art, and, by contributing largely to the general fund of photographic knowledge, not only to maintain our Society in the high position which it has taken among the kindred institutions of this country, but to raise it a step or two higher in the scale of excellence and rank."

Mr. YERBURY then said:—

"Gentlemen,—I rise to thank you for the very high honour conferred upon and confidence placed in me, in appointing me to so high a position in this Society—a Society so large, whose influence is not confined to the name it bears, but to its world-wide influence; and to hold so high a position in such a Society is, I assure you, gentlemen, an honour I feel proud of.

"I thank you also for the confidence reposed in me by placing so much of the Society's interest in my hands—an honour I shall strive to merit by careful attention to the duties devolving upon me. I enter upon the task of the secretaryship with some amount of timidity, knowing the very large amount of work that is involved in it. I go forward in the confidence that I have in my fellow office-bearers, whose co-operation I feel certain of from the experience I have had in the past while a member of Council. I trust, therefore, with their good support to fulfil the duties to the satisfaction of the Society.

"Accept, then, my sincere thanks for the very great honour you have conferred upon me, and rest assured nothing will be left undone by me that will help to promote the interest, prosperity, and reputation of the Edinburgh Photographic Society."

Votes of thanks were then given to the retiring office-bearers, council, and chairman, and the meeting adjourned.

#### THE PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

The ordinary monthly meeting of the Board of Management was held at 174, Fleet Street, on Wednesday, November 4th, Mr. GANLY in the chair.

The minutes of the previous meeting having been read and confirmed, Mr. J. B. Hall was elected a member of the Board, vice Mr. Bird, elected chairman. The Relief Sub-Committee read their report, which was received, and ordered to be entered upon the minutes. To induce photographers in the provinces to become local secretaries, it was resolved "that a commission of ten per cent. be allowed to local secretaries upon all subscriptions and donations collected by them."

The SECRETARY announced that the following gentlemen had promised donations of photographs for the Art Union Distribution, viz.:—Mr. Bedford, Mr. Blanchard, Mr. W. England, Mr. Hubbard, Messrs. Fradelle and Marshall, A. and G. Taylor (at least £10 worth of their Albert Memorial series, as well as a donation), Spence, Sawyer, Bird, and Co. (two of their 30×24 enlargements in the exhibition), A. and J. Bool, Mr. A. Ford Smith (a framed photograph like No. 49 in the exhibition, and some other landscape), Mr. J. M. Young (any photographs in his or previous exhibitions the Board may select), Mr. H. Whitfield (the three framed pictures, Nos. 76, 77, 78, in the exhibition, and six landscape photographs), Mr. F. M. Sutcliffe, Mr. J. Brier, Jun. (eight 12×10 landscapes, received), Mr. J. A. C. Branfell, Mr. F. Howard, Lieut.-Col. Roche, Mr. B. J. Edwards, Messrs. S. and E. White, Rouch and Co., Russell and Sons, Mr. Werge (No. 215 in the exhibition), and Mr. E. Fox; so that there was every indication of a successful drawing.

The form, date, and place of general meeting were



then discussed, the Board being of opinion that after the election of officers, &c., it would be as well if some kind of an entertainment could be arranged. Several of the members present were able to promise for themselves and friends assistance towards an entertainment. It was then resolved that the general meeting, to be held in January next, after the despatch of business shall resolve itself into a *conversation*, and that the prizes in the Art Union distribution shall be exhibited, together with a lantern exhibition, and a musical entertainment to be provided by members and friends. Art Union tickets to admit to this entertainment, as well as giving a chance in the drawing.

Mr. GANLY then vacated the chair (which was taken by Mr. Ashmau) and tendered his resignation as Deputy Chairman of the Board of Management, on account of leaving England for India.

Mr. W. T. WILKINSON expressed his regret at losing Mr. Ganly, as he had been connected with the Association since it had first started. At the same time he hoped that Mr. Ganly would like his appointment in India, and would have a pleasant journey. A vote of thanks to Mr. Ganly was carried by acclamation, all members wishing him God speed on his journey.

Mr. GANLY thanked the members for their kindness, and said that although he had resigned his office, he was still a member of the P. B. A.

W. T. WILKINSON, Secretary.

#### PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.\*

At the September meeting of the Photographic Section of the Institute Mr. H. J. NEWTON read a paper on "A Rapid Dry Process" (see p. 500, Oct. 16).

Mr. MASON.—Before Mr. Chapman went into the country, I called one evening at the Rutherford Observatory to close up some astronomical work, and found him experimenting with collodions with his actinometer, which he exhibited here some years ago; and among the samples he was trying a collodion containing chloride according to a formula given by Mr. Newton. He did not tell me the exact formula, but found the collodion was not so sensitive as the collodion which he used for star work.

The PRESIDENT.—I am not prepared to say that for in-door work the chloride is as advantageous as it is for dry plates. Whatever collodion Mr. Chapman may have been trying, he uses a collodion very near that formula without the chloride, and he uses no iodine nor bromide except cadmium. The proper way to test it would be to make a collodion with the same chemicals, some without the chloride and some with, and, in trying the two, to flow the plate half with one sample and half with the other, and expose them together.

Mr. MASON.—This method of working with the scale I consider an important test. It will be remembered that some years ago I read a paper in which I claimed that we must fall back on artificial light, where we can get a constant amount of actinic force, because there are changes on a perfectly clear day caused by varying strata in the atmosphere containing absorbents, which change the nature of the light materially.

Mr. PARKHURST.—How rapidly would such changes occur?

Mr. MASON.—Within a very few minutes. I have observed a very material change in the course of five minutes.

Mr. PARKHURST.—I have found when making photometric observations of the stars on evenings which were apparently perfectly clear, that there would sometimes be very appreciable changes in their brilliancy in the course of a few minutes.

Mr. J. B. GARDNER.—I have tried the collodion from the formula given, and it worked quicker than the collodion I had been using, and consequently I have used it ever since. I did not in any instance use any iodine, but found that the collodion invariably changed its colour to a certain extent, and there was no need of colouring with iodine.

Mr. THOMAS.—If your cotton was fumed you would require the iodine.

Mr. GARDNER.—If the colour is light it works well; it is a light straw colour, and grows darker.

The PRESIDENT.—I have some which has been made nearly a month, and it is as white as water.

Mr. CHISHOLM.—The way I have been in the habit of making my collodion is, to dissolve the cotton in ether and alcohol, reserving a certain portion of the alcohol for dissolving the salt—the iodide or bromide. They keep perfectly white for a year in that way; but when they are put together, the next day they are straw colour, and keep growing darker. I inquired of Mr. Anthony the cause of it, and he says that if you dissolve cotton in alcohol and ether it will, in time, become acid, but will not show it until you put the iodide with it. It keeps turning red after putting them together.

\* *Anthony's Bulletin.*

Mr. THOMAS.—It ought not to with cadmium.

Mr. CHISHOLM.—I used Anthony's No. 1 cotton, and the ether was made expressly to order for me, and there was no alcohol with it.

Mr. THOMAS.—If you want to keep it colorless you can do so, by putting in a strip of metallic cadmium.

Mr. MASON.—I noticed in a recent communication of Dr. Vogel that he had given a formula for collodion which he had used for some years successfully, and he received a letter from an eminent photographer who had used the formula and had been successful with it; and, in corroboration of his statement, he sent plates which Dr. Vogel declares were enough to make a man blush to have recommended such a thing. The gentleman sent him other plates, which were very brilliant, made exactly in the same way except the collodions. Soon after Dr. Vogel met this gentleman, and found that his method of iodising the bath was by dipping the plate, and letting it stand over night, which was sufficient for his own collodion, but not sufficient for Dr. Vogel's formula. Dr. Vogel mentions that as an important item. He iodises his bath by forming iodide of silver, and adding it to the solution.

Mr. THOMAS.—I never think of such a thing as iodising a silver solution.

Mr. MASON.—I always add an amount of iodide of silver. I have tried the method of iodising the bath with the plate, but never found it work as satisfactorily.

The PRESIDENT.—When I make a new bath, I add the iodide of potassium to the solution.

Mr. THOMAS.—I do not think I make a new bath once in seven years. I use them pretty acid. I find that a silver solution will always correct itself. The iodide of the plate is down in the bottom of my bath, where it is like mud.

Mr. MASON.—I take pure metallic silver, and add to it a sufficient amount of nitric acid to dissolve it; then add to that water sufficient to make the strength I desire; then put it in the evaporating dish, and boil it; then I filter it, and render it acid by the addition of nitric acid, and put it in the bath, and I am ready at once to go to work.

Mr. THOMAS.—If the bath is new it will work too rapidly. I never found my bath out of order.

Mr. MASON.—Can a silver solution that has never had iodide of silver in it be used to make a negative?

Mr. THOMAS.—Yes; I make it quite new, and never think of such a thing as putting in iodide of silver. In making collodion, if you do not put the bromide in first, it will not do for me. I would never use a drop of water that was not boiled.

The PRESIDENT.—I have directed in my formula that the bromide should be put in first.

Mr. CHISHOLM.—The bromide of potassium always worked clearer with me than any other bromide.

Mr. MASON.—When I commenced working the collodion process in 1854, we were very careful about adding water to the collodion, not to put in more than was necessary. Afterwards I made a series of experiments with collodion to which I added as much as four ounces of water to twenty ounces of collodion, and made a perfectly homogeneous film, which would bear examination under the microscope. I was surprised at the amount of water which could be used in collodion, and give a beautiful film. On the other hand, collodion with very little water in it will sometimes give a very bad reticulated film.

Mr. THOMAS.—The cotton was made at a very high temperature, and you cannot use much water with that. I use cotton made at a low temperature.

### Talk in the Studio.

PORTRAIT OF THE LATE PRINCE CONSORT.—We have recently seen an interesting application of photography in a portrait of the late Prince Consort. Possessing a small negative which he had taken of His Royal Highness, which was not sufficiently perfect for ordinary printing, Mr. Rejlander felt that there was in it a nobleness and truth of likeness rarely seen in the Prince's portraits. He secured, therefore, a slightly indicated outline of it in an enlarged form, and proceeded to work it in crayon and sepia, finally finishing with varnish, and giving the effect of a fine oil painting in monochrome. As a work of art it is admirable, and as a portrait it possesses a nobility and dignity, and an intellectual thoughtfulness, we have not seen in any other portrait of "Albert the Good."

COLOURED ENAMEL PORTRAITS.—Various attempts have been made to combine tinting or colouring with the effective style of enamelling card and cabinet portraits now in vogue;



but the great difficulty of moving and spreading the applied tints has stood seriously in the way of success. We have seen some examples by Mr. Leslie in which this difficulty appears to have been overcome, the prints being brilliantly tinted, and subsequently enamelled without injuring the colours. The result depends, we understand, upon the use of a vehicle with the colours which protects them from softening and spreading when in contact with the aqueous solution of gelatine. The result is very effective.

**A STARTLING INVENTION.**—If our readers are not "startled" with the following, which appears in the *Pictorial World*, they will at least be amused:—"Almost simultaneously with the opening in London of the Exhibition of the Photographic Society of Great Britain—which we may notice more fully next week—and the revival of attention to the important position photography is attaining in the production of *genre* and original works of art, there comes the intelligence of a photographic invention so startling in its power for good or evil that we can only compare it to the wondrous lamp of Aladdin, or to the feats of genii in Eastern story. An Englishman—for it is an English invention this time—has discovered a method of fixing the image of an object on a sensitized plate not more than half an inch in diameter, an impression from which can be afterwards enlarged to the necessary size. The plate is fixed into an ordinary locket or keepsake hanging from a watch chain, and can be suddenly exposed, by a touch of the finger, on entering a room, and an image taken of a picture or a person without any one besides the operator being aware of it! The ingenious method by which the exact place, person, or picture is brought into focus by first casting a soft ray of artificial light from this wonderful locket is the important part of the invention, which we are not at liberty to mention further in detail at present. Whether or not such things can be done to any purpose, it is high time that artists and photographers who produce original pictures should look to the immediate protection of every work of art or new design by entering them at Stationers' Hall. As the law of copyright stands at present, it is, we believe, the fact that from the moment an artist opens his studio door to the photographer, for him to take a private copy of his painting before the work is sent away for exhibition, his property in his own composition is in jeopardy if he has not taken the precaution of protecting it—a ceremony costing *one shilling*. But if this marvellous invention we have spoken of, and of which the public will soon hear more, is to be perfected as easily as we are assured it will be, no picture can be exhibited in a public gallery, or even in a shop window, without risk of being copied on the spot. Of the numberless uses—practical and amusing, good and bad—to which such an ingenious contrivance may be applied, we will only now mention one—the foremost, we understand, in the inventor's mind—viz., as an instrument in the hands of the detective police of the metropolis." The dangers to copyright suggested, even if such an instrument existed, are all moonshine.

**SELLING INDECENT PHOTOGRAPHS.**—In a charge against William Burton, described as a middle-aged man, of Holywell Street, it appears, according to the evidence of Inspector Harnett, as reported in the *Daily News*, that the accused, in addition to some twenty or thirty books of an indecent character, had in his possession some negatives, which were found at the bottom of the house. The prisoner said that they were brought there by a man named Harrison about a fortnight ago, for safety. They were examined, and were found to be of a most indecent character. There were ninety-one glass negatives. Witness had known the prisoner for some time by the name of White.—Sergeant Kerley, detective E division, said that, having received instructions from Superintendent Thomson, he went with inspector Harnett to 32, Holywell Street, on Saturday last. He went down stairs, accompanied by a female who was told by the prisoner to go with witness, and there in a cistern in the kitchen he discovered a false bottom, and in it a number of negatives.—Several objections were raised, but Mr. Vaughan considered there was sufficient evidence to make out a *prima facie* case.—The prisoner was then committed to the Central Criminal Court, and Mr. Vaughan said he would accept substantial bail, the prisoner in £500, and two others in £250 each.

**DEALING WITH BLISTERS.**—A correspondent of *Anthony's Photographic Bulletin* says:—"My plan is as follows. We will suppose the prints in the hypo solution, and blistered. Now we take them from the hypo, and pass them through one or two changes of water, not leaving them very long in either.

Now take two sheets of blotting paper, and cover one of them with prints from the water just so that they do not lie one on the other, and then, with the other blotter on top, rub all the water out of the prints, and you will have rubbed the blisters down. Now lay the prints thus rubbed between sheets of unprinted printers' paper, and let them get nearly dry, when you can put them again into the water, and wash them as long and as hard as you wish, and you will see no more blisters on those prints. I have yet to lose the first print treated as above. As to their permanency I cannot say; but thus far they do not show the least sign of injury."

## To Correspondents.

**ONE WHOSE AMBITION IS TO EXCEL** sends, for our opinion, a transparency on a plate prepared in accordance with Captain Abney's instructions for the albumen-beer process. It is very excellent: clean, soft, delicate, brilliant, and of an admirably rich tone. Our correspondent adds that he has succeeded with the albumen process in obtaining fine transparencies, but he does not state which of the albumen processes. He has also found the instructions of Mr. Davies for mounting without cockling answer admirably.

**C. R.**—The address in question frequently appears in our advertising columns: it is No. 1, Budge Row, Cannon Street.

**J. J. S. G.**—First try the bath, and ascertain if its working qualities are injured; and if this be so, then add a portion of fresh silver solution, which will probably restore working conditions. 2. The legitimate or fair time in which a plate can be worked depends much on the state of the weather. We should say, however, that twenty minutes was ample time for completing a quarter-plate negative, from coating the plate to fixing the negative. In summer weather it would not be difficult to do it in less time. 3. We will have pleasure in stating your judgment upon any examples sent.

**GEORGE.**—Coralline is a preparation of aniline. We do not think it likely that provincial chemists will keep it; but we can scarcely suppose that photographic chemists in town will tell you that they know nothing of it. If you have tried all the photographic chemists in town, write to Messrs. Mawson and Swan, at Newcastle-on-Tyne.

**PIERRE REVON.**—So far as we can judge from some personal experience, and from the reports of those who have carefully tested the matter, there is an advantage in rapidity and in excellence gained in fuming sensitive albumenized paper with ammonia, whether in direct enlarging operations with the solar camera, or contact printing from the negative. We should not, however, with any commercial sample of paper, use a bath of more than ten or twelve per cent. 2. The use of carbonate of ammonia in the fixing bath does undoubtedly, we think, give advantages in securing perfect fixation, and in preventing acidity and decomposition of the hypo bath. Washing with salt and water is not necessary; but it is wise always to wash the print well, or even immerse it in a weak alkaline bath after toning, to avoid carrying anything into the fixing bath which might tend to decomposition. 3. So far as we know, No. 3 on your list stands highest.

**CORNWALL.**—We do not remember the price, nor maker's address.

**ASSISTANT OPERATOR.**—The coarse, morocco-like texture at the lower end of the plate, with a slight tendency to reticulation, is due partly to the collodion and partly to the manipulation. The collodion is probably somewhat thick and glutinous in texture, and it has been immersed in the bath before the film was well set. At this season of the year, the weather becoming colder and the atmosphere damper, the collodion requires more time to set properly before immersion in the silver bath than in summer.

**F. G. R.**—We presume that any camera maker will be able to apply the small inside shutter as a substitute for the cap of the lens. In any case you can apply to the gentleman who exhibited that mentioned at the South London meeting.

**B. D.**—We saw the paragraph in question. The ownership of the negative has been for some time a moot point. Some hold that by the last Fine Art Copyright Act the copyright of a portrait taken in the ordinary way of business belongs to the sitter; but even then the negative itself would belong to the photographer. Others hold that the copyright falls to the ground altogether without an agreement in writing; but then, also, the negative belongs to the photographer. This is our own impression. See some remarks on another page.

**G. K.**—A good substitute for the ground glass may be made by coating ordinary glass with a matt varnish; or if that is not at hand, a plate collodionized and excited may be used; or starch, applied warm to a plate, will form a fair substitute; or crystal varnish with a little white wax added. There are also other methods of producing a similar substitute.

**JOSEPH BYRNE.**—Thanks; we shall have pleasure in examining and reporting.

**G. WILLIS** and **R. W. ALDRIDGE** in our next.

Several Correspondents in our next.



## The Photographic News, November 20, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### THE AUSTRIAN NORTH POLE EXPEDITION—A NEW APPLICATION OF KAOLIN.

*The Austrian North Pole Expedition.*—Travellers often tell strange tales, we know, and it is not always the more truthful parts of them that obtain most credence. The story of the sailor lad, whose wonderful experience his mother was quite ready to believe in until he came to his description of flying fish, is one which finds its parallel every day, and no wonder, therefore, when travellers find their friends doubting realities, that they should resort to the marvellous and imaginative to make their story interesting, if it is nothing else. The popular idea of the Arctic regions and the North Pole will, we think, be somewhat shaken by the photographs that come to us from Vienna of the Austrian Polar Expedition. The charming pictures taken by Lieut. Chermiside, R.E., last year, when attached to Mr. Leigh Smith's Northern expedition, gave us a good idea of what the Arctic regions are under favourable circumstances. One could almost trace colour in some of them in the glow of light upon the horizon, and behind the rugged headland stretching far into distance, which afforded such capital pictures for the camera. The scenery further north, such as it is shown to us by the Austrian pictures, is far less picturesque than the country depicted by Mr. Chermiside. The expedition, as our readers know, penetrated further north than any other, with the exception of an American one under Hall, whose journeyings, by the way, are not very clearly defined, the most northern point reached by Lieut. Payer being 82.5 degrees, and he observed land as far north as 83 degrees, or thirty miles further. In this kingdom of desolation the ice fields extend in all directions, the flat mountainous surface of white being represented in the pictures brought home with terrible reality. The ship had to be abandoned altogether, because it became hopelessly surrounded by ice fields; and certainly the picture of the vessel in this position shows that the explorers were perfectly right in doing so. They started north in August, 1872, and were unfortunate enough to become attached to the ice and frozen to the main land very shortly afterwards. They remained with their vessel fourteen months, until the commencement of the present year, and during this period a small party, commanded by Lieut. Payer, set out and explored the country more to the north. They called the northern wastes they traversed by the name of Franz Joseph Land, a wild rocky country where moss and lichens are the only representations of the vegetable kingdom. The party has not brought back with them a photograph of the North Pole itself, reared on end, with the Austrian colours flying, which would perhaps have been convincing proof to Mrs. Grundy, who, like the sailor boy's mother, requires something confirmatory of her own established notions; but the pictures go far to confirm their story. Unable to use their vessel to return, they turned the ship boats into sledges, and in this way reached the Nova Zembla Islands, where a Russian vessel providentially found them and bore them to Norway. It has been suggested by Mr. Glaisher, we believe—who, as our readers know is the most experienced scientific aeronaut living—that the next Polar expedition should carry out with it a balloon with which it could make an ascent at the most northern point reached, and thus be able to see, perhaps, a hundred miles farther on. If, for instance, Lieut. Payer had been provided with a balloon in the present instance, he would have been able, supposing the weather were clear, to have seen as far as the North Pole, and could have told us whether land existed in those regions, or whether there was an open sea, as some affirm. There would be some difficulty, perhaps, in taking out apparatus for evolving gas to fill a hydrogen balloon, but in such a cold climate the Montgolfier, or fire balloon, might, perhaps, be made use of. Mr. Glaisher

tells us that in one of his ascents in England he was able to see the coast of Norfolk and that of Wales at the same time, the whole breadth of England being visible at his feet at one time, as if it were a gigantic map. However, such a lofty ascent as this would not be necessary in order to see to the North Pole by any expedition going so far north as that of Lieut. Payer's. Another expedition has already been formed at Vienna to start next summer, and this is to be supplied with observing instruments, including cameras of the most improved description; but the question of a balloon equipment is obviously a matter that will require further consideration.

*A New Application of Kaolin.*—The photographer's old friend kaolin, or china clay, is to be used for other purposes besides that of clarifying muddy silver baths, a service which it discharges to the great satisfaction of us all. Wine growers and merchants have found that its fining properties may be made use of with great benefit in clearing wines. A quantity of kaolin, amounting to about a half per cent. of the weight of wine to be operated upon, is mixed with a small quantity of wine, so as to form a pasty mass, and this is then added to the liquid that requires fining. The impurities in suspension are caught up by the finely-divided clay, and thrown down with the latter in the form of an insoluble deposit, which may be decanted off, or, if need be, filtered from the wine. It is stated by those who recommend kaolin for fining wines that should the clay contain iron as an impurity, it must be digested with dilute hydrochloric acid, every trace of acid being, of course, washed out again before the material is employed for clarifying. So that if any photographer is troubled with claret or sherry becoming turbid, he need merely have recourse to his ordinary photographic clearing agent to make it all right again. So far as we ourselves are concerned, we should prefer employing a clay with an alkaline rather than acid reaction.

### THE "GLACE," OR ENAMELLED PHOTOGRAPH.

#### How to Do It.

BY I. B. WEBSTER.\*

THE glass upon which the enamelling is to be done must be scrupulously clean. Plate-glass, free from scratches, is the best, although good photograph glass will do if not scratched. Blisters in the glass hurt nothing. After it is thoroughly clean, sprinkle over it, by means of a five-cent pepper-box, "powdered tale" (or French chalk), and with a tuft of cotton rub in a circular motion (carefully going over the whole surface) until no trace of the chalk is perceptible. Do not rub heavily. The chalk gives a surface to the glass that assists in the lifting the enamelled print from it. Now flow the plate with collodion made as follows, viz.:—

Ether ... ..	4½ ounces
Alcohol ... ..	3½ "
Cotton to thicken (say from 5 to 7 grains to the ounce of solution), and 24 drops (or minims) of castor oil.	

When this flow is dry, apply the prints, face down, after immersing them in a gelatine solution made as follows:—

Cox's gelatine ... ..	1 ounce
Water ... ..	8 ounces
Glycerine... ..	50 drops.

Add the gelatine and glycerine to the water, and let it stand over night, when it will be ready for use after filtering, which can be done by warming sufficient to make the solution limpid. Allow the prints to remain in this solution about five minutes before laying them on the collodionized glass, and then pass a gum roller lightly over them to press them tightly to the glass, and also to remove the surplus gelatine. After the prints are nearly dry they are ready for the mounts. For this purpose light "Bristol-board"



is best. Use the gelatine solution for mounting, and mount on the glass as the prints lay. The whole thing must be perfectly dry before an attempt is made to remove them from the glass. When they are dry run a knife-blade around the edge to start them up, and if thoroughly dry and the work properly done, they will come off all right. I forgot to say in the proper place that it is a good idea to lay upon the back, after the mounts have been applied, a weight of some kind (say a heavy piece of glass), which should remain there for an hour at least. This assists in securing a complete contact to the print. At the end of an hour remove the weight and leave the print, back up, until perfectly dry all through. Sometimes they start off without help, which shows perfect success. Remember that "careful manipulation" is the only surety for success. A little experience will enable any one to perform this operation well.

### ELIMINATION OF HYPOSULPHITE OF SODA FROM PAPER PRINTS.\*

REPORT OF COMMITTEE.

THE committee appointed for the purpose of testing Mr. Henry J. Newton's method of removing hyposulphite of soda from photographic prints by means of acetate or nitrate of lead would respectfully report:

That they have had four meetings since their appointment (all the members of the committee being present except Mr. D. C. Chapman), and have made a series of experiments both in foreign and domestic albumenized papers.

The committee, believing the permanency of silver prints of vital importance to every photographer, they have neither spared time nor expense in trying to solve the problem for which they were appointed. While they set out with the belief that there were many causes why photographs have never been made positively permanent, they are still under the impression that there is nothing so likely to ruin them as the agent used for making them unchangeable.

The committee in their experiments have demonstrated in many ways the wonderful tenacity with which the hyposulphite clings to albumenized silver prints, and thus arrived at the conclusion that perhaps not one picture in a thousand was ever absolutely free from it. If, therefore, Mr. Newton's mode of removing it was true and practicable, it should be proven and made known to every photographer who takes even the smallest interest or pride in the permanency of his work. And all due praise should be rendered to him who had removed one of the chief stumbling-blocks in the way to the development of an art, not only highly useful in its tendencies, but designed to elevate the æsthetic status of humanity. At one of the meetings of the committee it was determined by careful experiments that of all the known tests for detecting the presence of hypo, the starch and iodine was the most reliable when freshly and properly prepared. By this test not even the 250th part of a grain in an ounce of water, or  $\frac{1}{125000}$  part, escaped detection.

It was also demonstrated by experiments that the acetate or nitrate of lead was the best known means of decomposing the hypo. Prints that were washed after coming from the lead solution in simply four changes of water showed no trace of hypo, while those washed in running water for twelve hours or more (without the lead solution) were still found contaminated with it.

The committee also followed minutely the entire process of silvering, printing, and toning as practised by Mr. Newton, which is as follows:—

#### *Silver Bath for the Paper.*

Water	...	...	...	...	1 ounce
Nitrate of silver	...	...	...	...	40 grains
Nitrate of ammonia	...	...	...	...	20 "
Nitrate of lead	...	...	...	...	5 "

\* *Photographic Times.*

Aqua ammonia sufficient to make the bath slightly alkaline. The paper fumed ten minutes, and a trifle overprinted.

#### *First Washing Water.*

(As originally published by Mr. H. T. Anthony.)

Water	...	...	...	...	1 gallon
Acetic acid (No. 8)	...	...	...	...	$\frac{1}{2}$ ounce

Followed by three changes of plain water.

#### *Toning Bath.*

Water	...	...	...	...	40 ounces
Commercial chloride of gold	...	...	...	...	15 grains
Carbonate of magnesia	...	...	...	...	40 "
Saturated solution of bicarbonate of soda	...	...	...	...	$\frac{1}{2}$ drachm
Tartrate of antimony	...	...	...	...	30 grains

(Or  $\frac{1}{2}$ -ounce of a 60-grain aqua solution)

Saturated solution of lime water ... 1 ounce

This bath, when used, to be reduced with water to suit the speed with which it is desirable the prints should be toned.

#### *Fixing Bath.*

Water	...	...	...	...	8 ounces
Hyposulphite of soda	...	...	...	...	1 ounce

#### *Bath for Eliminating the Soda.*

Water	...	...	...	...	30 ounces
Acetate of lead	...	...	...	...	30 grains
Acetic acid (No. 8)	...	...	...	...	1 drachm

In using this formula the committee proceeded as follows:—

After the printing the pictures were soaked in the acid solution ten minutes. They were then washed in three changes of water (not exceeding a gallon to a sheet) and placed in the toning bath, which was compounded in the following order: Thirty grains of chloride of gold dissolved in twenty ounces of water, with carbonate of magnesia sufficient to neutralize the solution. Then was added the bichloride of soda, lime water, tartrate of antimony solution, and finally water sufficient to make up the bath to eighty ounces. The pictures, after being toned and fixed, were first washed in three changes of water (which took about three gallons in all) and then placed in the lead solution, where they remained from five to ten minutes—thirty ounces of solution being used for each sheet of paper (though much less than this would have answered the same purpose). The final washing of the prints was completed by passing them through four changes of water, thus consuming much less time and less water (viz., one gallon to a sheet) than is commonly used by most of the ordinary modes of treatment.

The committee found that the fourth washing water showed no trace of hypo by the test they adopted, and therefore believe prints treated with the lead salt perfectly free from the often deleterious effects of the fixing bath. But, to further prove whether they are right in their conclusions, they propose to subject the prints, herewith presented, to such tests as may best be devised for proving their permanency.

J. B. GARDNER,  
H. T. ANTHONY,

O. G. MASON,  
JAMES CHISHOLM.

### AWAY-FROM-HOME PHOTOGRAPHY.

BY EDWARD VILES.\*

THE series of views in the late Exhibition, Nos. 140 to 151, about the production of which I am asked to furnish some particulars, were all taken by the ordinary wet-collodion process, and at a considerable distance from my residence. Nos. 141 and 146 were prepared and developed in one of Murray and Heath's box-tents; Nos. 140, 142, 144, 149, 150, and 151 in a Clarence carriage, temporarily adapted for the purpose by covering the windows with orange paper; and the Welsh views, Nos. 143, 145, 147, and 148 in an omnibus. So far as manipulation is concerned, I am not aware that any difference can be detected

\* Read before the Photographic Society, November 10th.







for an indefinite period. When away from home on a tour, I simply wash and sun-dry the plates as above, and leave them till my return, which may be in a week, a month, or longer. Some negatives I took in Wales last August now remain in the plate-box in this condition. The convenience attendant upon this proceeding scarcely requires pointing out.

I always fix in a wooden tray containing a saturated solution of hyposulphite of soda. Before the negative is immersed in the fixing bath, however, it must be well wetted all over under the tap, otherwise destructive markings will ensue. When thoroughly fixed, wash the plate well with hot water, which will effectually get rid of all traces of hyposulphite in less than half the time that cold water would require. But it is advisable to give a final rinse with cold water.

Upon now holding the negative up to the light, an accurate opinion can be formed as to its qualities. The colour will be brownish, and, in all probability, it will be sufficiently dense to yield a good print, although to the eye it may look somewhat thin. But should it appear that more intensity is wanted, prepare the following solution:—

Iodine	...	...	...	20 grains
Iodide of potassium	...	...	...	40 "
Water	...	...	...	1 pint

Take sufficient of this port-wine-looking mixture, and with one sweep flood the plate; keep it flowing to and fro for a minute or so. It will sometimes happen that this operation will produce sufficient intensity, for it clears the shadows and produces contrast. Its object is to prevent all danger of fog or stains in subsequent operations, and it serves to facilitate the action of the intensifier, which is thus made:—

Pyrogallie acid	...	...	...	45 grains
Citric acid...	...	...	...	10 "
Glacial acetic acid	...	...	...	1 ounce
Rain water	...	...	...	20 ounces

Now go into the dark room and pour sufficient of the above into a developing cup and flow well over the plate, and leave it there; then add to the solution remaining in the measure a few drops of a twenty-grain solution of nitrate of silver (more or less, according to the degree of density needed). Begin with a little; more is easily added afterwards. Give the measure a circular shake, and drain into it the solution that remains on the plate. By this means a complete and intimate mixture is obtained, and a smooth, even flow over the negative ensured. Pour on and off the negative until the requisite depth is reached. Take care not to make the negative too dense, for the action of the intensifier is very energetic.

I recommend the above method to all those who find a difficulty in getting enough density. It is the result of a patient trial of all the formulæ which have been published during the last half dozen years. It is preferable to intensify after fixing, because one is so much better able to judge of exact density gained.

After a thorough and final washing, the plate is ready for varnishing. I prefer to dry by a clear fire, and put aside until cool enough to receive the varnish. The glass should be just warm enough to prevent the varnish from chilling, and no more. The warmth should be uniform all over. By keeping the plate cool the varnish flows better, and lines are not produced at the edge of the wave of varnish should its continuous flow be momentarily arrested. If one of these circular hair-like marks appears, keep the plate horizontal for a longer period than usual, and the mark will generally disappear; at any rate, sufficiently so not to show in the printing. I use Mawson and Swan's extra hard varnish, because it neither becomes sticky nor peels off, which is more than I can say of any other varnish I have tried.

Having now described the chemical operations, this paper comes appropriately to a conclusion. It was my intention to add some hints upon the mechanical work in

the field (the result of the experience gained in taking a considerable number of negatives), but I find space prohibits it. Should there be sufficient interest felt, I will draft my memoranda into a second paper.

Finally, I wish to say that for the application of dilute glacial acetic acid to arrest the development, I am indebted to an article published some time back by Mr. Wilkinson, and to Mr. B. J. Edwards for the admirable formulæ for developer and intensifier.

## OUR EXPERIENCE IN TAKING DIRECT LIFE-SIZED HEADS.

BY JOHN CHAFFIN.\*

I HAVE great pleasure in responding to the invitation of the Council, by giving a description of the method by which our large direct heads were taken, which have been awarded the first prize in the Crawshay Competition. I fear, however, the description will be disappointing, as I have no secrets to impart, or anything "new" (that I am aware of) to bring before you, beyond that which is already known; still, if from our experience anything useful is suggested, we shall be more than pleased in having made the communication.

**Studio.**—I will commence with the studio, which is about 30 feet long by 14 feet wide, and 7 feet 9 inches from the floor to the eaves. The roof is of the ordinary ridge or V-shape, save that the apex is not centrally placed, the glass side covering a larger area than the opposite or opaque side, by 3 feet, through the entire length of the roof. The whole of one part of the roof and side is glazed to within 6 feet of each end. Both ends are opaque, with the exception of a narrow light, which is admitted in the roof and side, about midway between the sitter and the background. We attach some importance to this intermediate light, as we believe it gives a relief to portraits which no other plan we are acquainted with will produce. It is not more than 6 inches wide, and is easily regulated by shutters, and made to fall upon any part of the background at will, and shut off altogether if desired.

**Lighting the Sitter.**—We find that greater contrast is necessary in lighting large heads than those of the cabinet or carte size. The situation of the studio allows a north-east light to fall obliquely on the sitter; and the stronger the light the more experience is required in arranging it. A large movable folding screen, covered with dark material, will be found handy in securing the proper amount of contrast; but no reflectors whatever of any kind were used.

**Lens.**—The lens is a 6½ inch portrait-combination, by Jamin, of about 20 inches back focus, a 3-inch central stop being used.

**The Plates.**—The plates receive a preliminary coating of sheet-gelatine (instead of albumen), as recommended by Mr. Tunny.

**Coating Plate.**—To coat the plate it is balanced on the cork of a bottle or jar, and tilted gently at the corners, to allow the collodion to flow evenly over the surface. Plates of almost any size can be easily coated in this manner.

**Collodion.**—Five of the portraits were taken with collodion made by ourselves, the portrait of Lady, No. 339, being taken with Mr. Edwards' collodion, of Hackney. The formula of our collodion is as follows, viz.:—

Alcohol, pure, 825.....	40 fluid ounces
Ether, methyl, 720 .....	40 "
Soluble paper.....	300 grains
Cotton giving a powdery film...	350 "

This is mixed and well shaken many times during the day, and then allowed to settle five or six days, or longer if not sufficiently clear.

Iodizer.—Iodide of ammonium.....	700 grains
Bromide of ammonium.....	500 "
Bromide of calcium .....	400 "
Alcohol, 820 .....	20 fluid ounces.



It is iodized by adding 1 part of the iodizer to 4 parts of the plain collodion. The plates were sensitized in a neutral 40-grain bath, in a flat dish.

*Exposure.*—The exposure given to head No. 337 was seventy seconds; the picture was taken at eleven o'clock in the forenoon. No. 338 was taken at half-past three in the afternoon, and exposed 100 seconds. No. 339 was taken about twelve o'clock, in a dull light, with an exposure of 2 minutes.

*Developer.*—The developer is that which Mr. Edwards gives with his collodion. The negatives were not redeveloped with pyro and silver; but should a plate appear too thin for printing, it is placed in a strong light (say for half an hour), when it will generally be found to have acquired sufficient printing-density. It is then fixed in a weak solution of cyanide.

*Printing.*—The negatives were printed on double albumenized paper, manufactured by Mr. Hart, of Kingsland Green. It was floated (three minutes) on a 60-grain silver solution, and toned in a phosphate of soda and gold bath.

## GERMAN CORRESPONDENCE.

BY DR. H. VOGEL.

TALBOT SENSITIZED PAPER—HEARN'S PRACTICAL PRINTER—REPRODUCING NEGATIVES—STYLISH BACKGROUNDS—CELLULAR STRUCTURE OF THE COLLODION.

PERMANENT sensitive paper has for years been an article of commerce here in Berlin. It is consumed in enormous quantities by machinists, architects, draughtsmen, &c., who copy drawings with it. It is the same process which is worked by Mr. Walker in Washington. The drawing is placed in the printing-frame, the sensitized paper on top of it, and the negative copy so obtained is not toned, but simply fixed and washed. The process is as old as photography itself, but its general practice dates from the time when Talbot here commenced to manufacture his permanent paper for the trade, for the engineers do not like to take the trouble of sensitizing their own paper. Talbot makes his paper by floating the sensitized sheets on a solution of a salt of tartaric acid. There are many formulæ for making such paper. I myself have tried several, and all with good result; but I have never obtained a paper which was as permanent as that of Talbot, for it remained in my dark room white for eight months, in spite of the influences of air and dampness. This, however, is not dependent on the formula, but also on a skilful manipulation. Talbot's paper is less suited for photographic purposes, as it tones poorly.

I see that Mr. Hearn, in his excellent work, "The Practical Printer," a book which contains an abundance of interesting matter, treats this subject also. I fully appreciate the thoroughness with which Mr. Hearn treats everything of interest for the printer. In a future edition of this beautiful book probably a new chapter will find place. I mean on reproducing negatives, for the new method of reproducing negatives is in fact a printing process, although with development. We cannot be too thankful to Mr. Obernetter for his publication of this process, which, in fact, is so easy and simple that every photographer succeeds with it after a few trials; and I feel convinced that in two years it will be practised in every atelier of any importance. The ordinary materials, dextrine, chromate of potash, and grape-sugar, can be bought almost anywhere; but of great importance is a very fine plumbago. We get ours from Nuremberg. Recently I received a sample of excellent plumbago from Mr. Bierstadt, in New York, which appears still more intense than the Nuremberg, and my first plates made with it were too dense. A few trials teach us how to use it. It is to be regretted that this method of reproducing negatives was not known earlier; for it would have saved many a valuable plate—as, for instance, my valuable Aden plates, all of which were lost.

Before the French Photographic Society Mr. Geymet claims that he has practised this process eighteen months earlier than Mr. Obernetter. This is in so far wrong, as Obernetter made "Lichtdruck prints" as far back as 1870 from negatives reproduced in this manner. The dust process is not new; neither Obernetter nor Geymet have invented it; but the main point is, that Woodbury, who worked after the formula published by Geymet, did not succeed, while perfectly successful with Obernetter's method.

Bierstadt, in New York, has sent to me a formula which differs somewhat from Obernetter's. I tried it, and it worked splendidly. It is as follows:—

Dextrine	...	...	...	4 grammes
Grape-sugar	...	...	...	4 "
Bichromate of potash	...	...	2½	"
Water	...	...	...	100 "

You will notice that no glycerine is used with this formula, which is surprising, as I thought it indispensable for the dry climate of New York. Further experiments must explain the action of the glycerine.

All the world complains about the difficulty of getting an artistic background. Plenty of backgrounds can be bought, but they are all too stylish, and rather suited to spoil the picture than to embellish it. Formerly the photographers got their backgrounds painted by scene-painters, but these were often very picturesque, and not always useful for photographic purposes, either too light or too dark in tone—in short, something was always wanting. Lœscher and Petsch paint their own backgrounds, and possess in Mr. Hartman an artist who thoroughly understands his business. All the other photographers are in a bad fix, as lately the scene-painters refused to work for them. In many instances backgrounds have been returned as useless, and this has induced them to refuse further orders.

Brothers Tœschler, in Switzerland, have now adopted a new method of making backgrounds. They place the figure in front of a monotonous background, and paint the accessories, which appear to them suitable, on the negative. They coat the back of the negative with a dull varnish, and make on it the drawing with lead-pencil. It consists of very simple objects. The effect is surprising, but it requires, of course, an artist.

In view of this absence of artistically beautiful backgrounds, it is advisable to use in their place wall-paper. Beautiful wall-papers are at present in the market, particularly cloth-paper with panel and frieze. Their artistic effect is very striking, and their photographic action is good. Colours which appear too light or too dark may readily be modified by either painting them with yellow ochre or with white. Our photographers here have employed these papers already very successfully.

We hear frequent complaints that the collodion of commerce shows so-called cellular structure. The plates look after development as if covered with a fine network, which under certain conditions makes the whole plate useless. I have examined a great many samples, and found this fault almost in every one of them. Very often it is not to be noticed with the naked eye, but with a magnifier of about one inch focus it is easily noticed. American collodions do not show this fault as much as the European ones. It manifests itself particularly in summer-time, and with fresh collodion more frequently than with an old one.

I have noticed it often, and in the highest degree with newly iodized collodion. Four weeks later not a trace of it could be noticed, and the plates were perfectly smooth. The probable reason is that collodion is now generally prepared at a lower temperature than formerly; this makes a thicker collodion, more sensitive, but also less smooth. Mr. Quidde remarks that this cellular structure is more frequent when the plates are warmer than the collodion which is poured on. He keeps his plates in summer-time in a very cool place. Mr. Primm states that with careful manipulation in pouring on the collodion this evil may be avoided. Certain it is that diluting the collodion will avoid it.—*Philadelphia Photographer.*



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## SUPPLEMENTARY LIGHT FOR REDUCING CAMERA EXPOSURES.

THE value of diffused light as an accelerator should be one of the things most easily tested, and the precise advantage gained determined beyond the possibility of further question. Curiously enough, it remains the subject of most conflicting opinions and contradictory statements. If it be a fact that by submitting the sensitive plate to a regulated amount of light before or after exposing it to the image of the sitter, the usual time of sitting may be reduced one-half—and this is the claim made by Mr. Fry as the result of experience—it is a fact of the most vital importance, which every portrait photographer should hail as an inestimable boon, especially during the dull, inert light of an English winter.

But, oddly enough, despite the definitely stated experiences of many, the use of supplemental light is by no means common. Some absolutely deny that anything is gained: they have tried carefully, and failed completely; and they are satisfied that the notion is a delusion. Others have tried with some advantage, but have found uncertainty and risk of fog; and they have not thought the plan worth attempting to adopt in general practice. And a great many more have not tried the process at all. The interesting question for consideration is, however, what is the cause of the negative results, or the positively objectionable results, obtained by some experimentalists? In many cases there is no doubt that this may be due to a careless and perfunctory mode of trying the experiment. Mr. Fry remarked that he could trace a large number of failures to the fact that the experimentalists had not followed instructions, but adopted some plan of their own which really did not carry out the principles involved. But the experience related by Mr. Sawyer did not admit of this solution. Mr. Sawyer stated that they had attempted to avail themselves of the alleged advantages of pre-lighting at the works of the Autotype Company, where they were largely engaged in reproducing large paintings. They had tried the plan carefully, giving the sensitive plate various degrees of pre-exposure from five to thirty seconds, but without any advantage whatever. The moment sufficient pre-exposure had been given to produce any appreciable action, the result was a certain degree of general fog, which increased in the ratio of the increased exposure. Experience of this kind, in opposition to the successful results of equally careful experiment, is very perplexing; but it may possibly be explained. We may remark, however, in passing, that the most respectable negative evidence is of comparatively little weight com-

pared with positive evidence. One well-authenticated case, in which the use of supplementary light sensibly reduced the exposure, would possess more value as evidence than a dozen cases in which it failed to do so. The former proves a possibility; the latter may simply prove that some condition of success was wanting, not that pre-lighting was really useless. But the case Mr. Sawyer stated, we think admits of a possible explanation, not antagonistic to the theory that diffused light is valuable in shortening exposures. In copying paintings, the exposure is, from various causes, necessarily much longer than would be required for producing a photograph, as vivid and full of relief and contrast, from nature. As a rule, the most brilliant painting is much lower in tone than nature, and this fact, together with the non-actinic quality of many of the colours, renders the exposure very long. Now during this long exposure there is a practical exposure of the sensitive plate to diffused light, as well as to the light forming the image. Every portion of the canvas is reflecting surface light into the lens, as well as the copy of the picture itself, during the whole time of the exposure, and one of the difficulties of picture copying arises from the fact that when the painting is in very low tone, or in very non-actinic colours, involving very long exposure, a general fog, producing flatness, dimness, and general want of contrast, relief, and vigour, often ensues. This being so, it is easy to understand that any additional exposure to diffused light would produce sensible fog rather than reduce the exposure. Mr. Fry's statement of his experience, when giving some idea of the right amount of exposure to diffused light, was to the effect that when any appearance of fog was produced the exposure was too long. In the case of the paintings it is manifest that the additional diffused light, beyond that reflected from the surface generally, was in excess, seeing that it produced fog.

The winter weather, and dark days, and comparative leisure which are before portraitists for a few months, afford ample opportunity for testing the question. Various modes of applying the diffused light are efficient; but perhaps none are better than the plan of using a cap for the lens with a disc of opal glass. This is the method which has been found so efficient by some distinguished portraitists in Paris, and which Mr. Fry has found so satisfactory. In the early days of the art the Daguerreotypist, when about to take a baby, or in any case where a short sitting was necessary, and the light dull, simply held his sensitive plate to diffused light for a second before placing it in the camera. We have adopted this plan with Daguerreotype plates scores of times with advantage. A curious experience was related to us a few days ago by one of the most eminent portraitists in the kingdom, which illustrated another mode of applying diffused light. Having occasion to use a new dark-room, and abandon that in which he had worked for some years, he was puzzled to notice a sudden and inexplicable change in the character of his pictures. Giving the usual exposure which his judgment dictated, the negatives were all under-exposed, and the general character quite different to those he had hitherto produced. They were hard, full of contrast, singularly clean in the shadows, but lacking in harmony, and a considerably increased exposure was necessary to acquire the old character in his negatives. The explanation subsequently discovered was, that the new dark room was made, *secundum artem*, perfectly dark, with the exception of the small portion of light through perfectly non-actinic glass; whilst the old room, somewhat patched up and make-shift, had admitted a sensible portion of actinic light. Another method of applying the supplementary light was patented in this country by Mr. Gage, an American photographer, something like half-a-dozen years ago. He gave the plate a preliminary exposure to diffused light as reflected from a dark, dull surface, like that of black cloth, a method we tried with unquestionable advan-



tage. Lining the camera with white paper, which has been proposed, and advantageously tried by some, seems to have the disadvantage of not being under control: whilst exposure through ground or opal glass, or exposure to a surface reflecting a small amount of diffused light—such as a dark background, for instance—gives the operator opportunity for exercising judgment. The various methods are, however, easily tried. A camera with repeating back, such as is now commonly used for card portraiture, permits two negatives with the same lens on the same plate, to be taken in rapid succession; and if a good negative be obtained in twenty, or even thirty seconds, and supplementary exposure, which would require forty seconds without the supplementary aid, there can be little doubt of the value of such a power, especially in large portraiture, where lenses of long focus must be used.

The very important question asked by Mr. Hughes at the South London Technical Meeting, whether the reduced exposure was obtained at a sacrifice of any kind in excellence or brilliancy, was promptly answered by Mr. Fry's statement that there was no loss whatever of any good quality—in fact, no difference perceptible in the character of the negative.\* Mr. Blanchard, who emphatically affirmed the value of the supplemental exposure—especially in producing large pictures in dull light—was somewhat more cautious. He affirmed that an absolutely good quality was gained. "Call it fog, or whatever you like; it is in reality harmony, the most important quality to gain—the quality in which photographs are most frequently lacking; and this harmony is secured, which would otherwise be only obtainable by very long exposure, if in dull weather at all." If the theory we have ventured to maintain before be correct, reduction of exposure without loss of any kind is possible. In our view, the preliminary exposure to light, when rightly timed, serves to initiate a change in the sensitive film insufficient to produce reduction without further action of light, but which, when duly carried on by the light from the image, materially abridges the required amount of action from the image. In short, that here, as in mechanics, that it requires a stronger force to initiate a movement, to overcome the *vis inertia* of a body, than to sustain or continue that movement when once begun. In referring to the theory of the matter, we are reminded of a question put to us a few days ago as to whether supplementary lighting—using the word in its most confined sense, as indicating diffused light following camera exposure—were as efficient as pre-lighting. At first glance we were disposed to think not; but on further thought there appears to be no reason to doubt it. In the first case, diffused light initiates an action which would not result in a deposit on applying the developer if the light of the image did not continue the action. In the second place, the diffused light carries on the action already set up by the light of the image, without being sufficient to initiate an action where the luminous image has not already commenced it. A special advantage is gained at times in being able to apply the supplemental light where pre-lighting has not been attempted. Where a child, an animal, or any sitter is seen to move before exposure is completed, the lens may be closed; and by a judicious supplementary exposure to diffused light a printing negative obtained from a plate which would have been otherwise absolutely useless. We repeat that the experiment is easily tried, and is certainly worth trying; but it should be tried with sufficient precision and care, if the results are to be trustworthy.

#### BRILLIANT NEGATIVES AND FINE PRINTS.

UNDER this title Dr. Liesegang has just issued a little pamphlet which, although referring especially to the strontium and lithium collodions prepared by his firm at

Elberfeld, contains much useful knowledge to photographers in general. The whole of the operations connected with the practice of photography are clearly described, and the formulæ cited which in his experience are the best.

He recommends the employment of two developers, the one for soft and the other for brilliant negatives.

For brilliant negatives:—

Water	...	...	...	100 parts
Sulphate of iron	...	...	...	5 "
Lump sugar	...	...	...	5 "
Glacial acetic acid	...	...	...	3 "
Spirits of wine	...	...	...	5 "

For soft negatives:—

Water	...	...	...	100 parts
Sulphate of iron	...	...	...	3 "
Sulphate of copper	...	...	...	3 "
Glacial acetic acid	...	...	...	5 "
Spirits of wine	...	...	...	5 "

Both of these solutions require keeping a day or two before they can be employed with advantage. Dr. Liesegang advises the operator never to pour more developer upon the plate than it can hold. When the plate is moved gently to and fro, as little as possible of the developer should be allowed to fall; for the more developer added, the weaker will be the negative. The developer remains so long upon the plate till all detail in the shadows has been brought out; it must be poured off, however, before the deepest shadows become fogged.

The cleaning of plates before being collodionized is a subject that receives attention, and any plates which after a thorough washing show patches, when breathed upon, are recommended to be immersed in a mixture of

Water	...	...	...	6 parts
Sulphuric acid	...	...	...	1 part
Bichromate of potash	...	...	...	1 "

Old plates should be rubbed with acetic acid and alcohol to which a little tincture of iodine has been added; a rag or bit of filter paper suffices to apply the mixture.

The collodion upon the plate should set perfectly before it is introduced into the dipping bath. If put in too soon, the film becomes dirty and dark, and unequal patches are formed, which are seen by transmitted light as soon as the plate comes out of the bath. If the collodion is sufficiently set, these defects are never seen. In cold weather the bath, as also the developer, may be warmed with advantage.

Summing up the defects that occur in the wet process, Dr. Liesegang says that fog may arise from badly cleaned plates, from an impure or neutral silver bath, from light finding its way into the dark room or camera, and from under-exposure and over-development. Patches arise mostly from the dark slide being wet and dirty, and from the employment of too fresh collodion.

As regards printing, Dr. Liesegang advocates a stronger bath, and longer treatment of the paper upon it in the case of a very brilliant and highly albumenized material. A durable sensitive paper may be obtained by preparing a sensitizing bath made up of two solutions:—

A.—Nitrate of silver	...	...	...	15 grammes
Water	...	...	...	100 "
B.—Citrate of soda	...	...	...	5 grammes
Water	...	...	...	100 "

By mixing together these two solutions, a thick white precipitate is formed, which disappears on the gradual addition of pure nitric acid, which is stirred into the mixture. Care must be taken not to add too much acid, so that there may not be an excess of it.

The toning and fixing processes are also treated of in full by Dr. Liesegang in his handy little volume.

\* See letter from Mr. Shingby on another page.



## THE USE OF SCREENS IN LIGHTING SITTERS.

UNDER the heading, "A New System of Lighting," Mr. C. E. Myers gives in our Philadelphia contemporary details of his use of screens and reflectors in portraiture, remarking that he found at the recent Convention at Chicago only a few of the more intelligent familiar with the value of such adjuncts to efficient lighting. He says:—

"For simplicity it will be understood, in this connection, that the subject to be lighted is a human head or bust, and the light as striking it from one direction only. This may be direct sunshine, or it may be a top-light, or a top and north side-light, or any other form of opening, the light being always an 'open light,' and the centre of the opening the centre of the light. The subject is placed at the point of strongest illumination of the face, and a screen is interposed between it and the opening admitting light. A yard square translucent screen thus placed softens the light. If near, the lighting is flat; if further removed, the effect is lessened, and at the distance of a few feet it is practically without effect. Its office is to soften the light, not to govern it, and for this latter purpose other appliances are necessary in connection with it or without it. Its proper position is between the subject and the point where the strongest light enters. As regarding effect, its angle is immaterial. A horizontal or a permanently inclined screen, attached to a common head-rest, so as to be adjustable for height or revolution about its standard, is the limit of effect.

"This is the beginning of the screen theory of lighting.

"If, instead of the ordinary translucent screen (recognized always as the white or blue screen), we use a semi-opaque material of some non-actinic colour, approximating to the colour of freckles, tan or skin blemishes, such as pale red or pink, light yellow or pale orange, or very light brown, the effect of the screen is immediately visible in the lessened necessity for retouching to remove skin defects, the skin having been lighted all one colour. The prolongation of exposure is much less than might be expected before trial, for the darker and lighter parts each get their proper share in gradation, instead of the whiter parts stealing the free silver, as is ordinarily the case while developing. The softening effect is also visible, as with the white screen, but less in degree, requiring us to place it further from the sitter and out of the camera's view, the exposure being, consequently, still less prolonged. This peculiarity marks the distinctive and opposite characteristics of the translucent and semi-opaque screens.

"With the first, softness is produced, even to the extent of flatness, by putting it close to the subject. With the second the shadows are stronger if the screen is placed very close, and it has to be removed to soften effects, the proper distance being a matter of experiment; and when tried it is found that, unlike the white screen, the angle or position has a marked effect on the particular lighting of the subject, rendering perfection of adjustment absolutely essential for the desirable effect. These experiments are best verified with the common hand-screen, and it will be found that the usual conglomeration of curtains, shutters, and sliding-screens, over the top-light, may be entirely dispensed with for the mere lighting of the sitter, thus saving expense, time in adjustment, and shortening the exposure still more.

"With a universally adjustable opaque screen the lighting effect is more marked, and the control of the light is as complete as it is possible to contrive with any form of curtains. Try it on a large doll with a palm-leaf fan.

"If the coloured screen is used it will be found effective in lessening retouching only on that side of the face exposed to it, leaving the darker side of the face woefully in contrast. The remedy is a reflector. A plain white reflector improves matters by lighting the darker side, but a white patch in the near eye is nearly always an accompani-

ment. If a coloured reflector is used this side of the face is manifestly improved as regards retouching, but remains too dark for pleasant contrast or satisfactory gradation. The remedy is to concave the surface of the reflector exposed to the sitter. The light is then concentrated to such an extent as to occasionally seem to reverse the former lighting of the face. This excessive effect is remedied by moving the reflector further away. The patch in the eye disappears when the concave reflector is swung so as to light only that part of the face below and back of the eye, and the darker parts of the hair and neck, leaving the direct light to illumine the eyes. The effect is always less on the plate than it appears to the artist's eyes, as the light is coloured, and the reflection of a coloured concave surface in the eyes, even when fully fronting it, is so insignificant as to be practically ineffective. If this reflector is not sustained and wielded by the hand it must be attached to some support permitting complete adjustment, as perfect accuracy of position is more decidedly essential in the reflector than in the screen itself.

"Since reliable lighting appliances have assumed the importance they have, and in view of the almost entire lack of information on this subject, I have thought it expedient to give these concise results of miscellaneous and detailed experimental experience. I will add here that I work a north light covered with clear glass, open all the year round."

## ON THE ESTABLISHMENT OF A BRITISH PHOTOGRAPHIC CONGRESS.

BY JABEZ HUGHES.\*

WHEREVER civilised men are gathered they seem to feel it a duty, as they certainly find it a pleasure, to form societies for the cultivation of whatever art or science they have an inclination for. Not content with merely instructing each other, they, through their journals, acquaint the world with what they are doing and what they have accomplished. Thus knowledge is cultivated, established, and diffused.

A still further development of this mutual form of cultivation has taken place in our times by the establishment of annual gatherings of all those who have some common object of study. These annual meetings in no way dispense with the need of local societies; they are supplementary to them. They not only supply the opportunity of the leading men of the various local societies meeting together, but they permit those also to assemble who are removed from the local centres, and who otherwise are without means of personally meeting with their fellow-workers. These yearly meetings become, in fact, annual parliaments for the promotion of some definite purpose. One of the advantages—and, perhaps, one of the greatest advantages—thus realised is the opportunity afforded to men of meeting together and strengthening their cause, by adding to it the closer bond of personal friendship. As the custom is now so generally established of having a period of relaxation during the autumn, that period is properly utilised to hold these meetings; thus the holiday is made capable of intenser enjoyment.

A "congress"—the name often given to these yearly gatherings—may be defined to be a large society composed of members living so remote from each other that they can assemble but once in the year. As a matter of convenience, as well as to give variety, the place of these meetings is usually changed each year; the additional duties and pleasures of host and guests are thus annually varied. The British Association for the Advancement of Science is the most marked example of these comprehensive peripatetic meetings. This Association, by its division into special sections, was apparently intended to embrace all the sciences and some of the arts. Fresh organisations, on a similar basis, have, however, been formed for the cultivation of

\* Read before the South London Photographic Society.



social, medical, archæological, and other sciences, as well as for other purposes; and the best proof that there is a need for such societies is that the number of them is increasing.

Seeing, then, that persons following other pursuits find the advantage of such annual meetings, I raise the question: Are they not equally applicable to photography and to photographers? To consider whether there is room for such an organisation is the purpose of this paper, and in addressing you I address also the great body of photographers, amateur and professional, scattered throughout the country.

No argument is needed to show the desirability of photographers meeting together to discuss any and all questions appertaining to the art. At present no means exist by which photographers in their collective capacity can meet and take counsel together. The best that can now be done is meeting together in the local societies and communicating with each other through the photographic journals. But these limited means seem inadequate to represent the collective photography of the country. The few existing societies are widely apart, whereas photographers are in every town and in several large villages, to say nothing of the many skilled amateurs who reside in remote and out-of-the-way places. At least once a year an opportunity should be afforded for all who are interested in the art, wherever they may reside, to assemble together, and there to discuss in a broad and comprehensive spirit any topics of especial moment.

We are bound to recognise the fact that, year by year, photography is rapidly becoming a matter of great importance. It is no longer a scientific curiosity, an agreeable pastime, a fascinating hobby. To some it will always remain of this character, and long may they enjoy their interesting pleasure; but to the bulk who practise the art it is a serious affair. With them it is their only way of earning a livelihood, of rearing their families, and of providing for declining years. The future development of photography will be materially modified by its changed aspect. When it was in the hands of the scientific man and the amateur, all fresh knowledge was freely given forth without money and without price: but now that vast stakes are invested in its commercial applications, every improvement has a definite financial value, and is capable of being turned into money.

This is a delicate subject to touch on, but I think it explains why professional photographers are and will be more chary in unbosoming themselves than amateurs. I think, also, that here will be found the explanation why photographic societies cannot exist in small towns. It is not so much in the smaller number who practise the art as it is in the trade rivalry and jealousy that prevent them associating and exchanging ideas. A clever man will not willingly educate his less skilful neighbour when the latter may use the knowledge against him by underselling or taking away custom; but the same man will willingly impart knowledge to another who lives a hundred miles apart. Anything, therefore, that can be done to relieve professional photographers from this pressure will produce benefit. I think that many will more willingly impart their knowledge to a great gathering than to a local society. There is something specially sympathetic in the meeting of those who come from distant places to see each other; the renewed personal contact, the flash of the eye, the tone of the voice, the grasp of the hand, stimulate men to thoughts that never otherwise would have found utterance. Therefore it is good for men to assemble together.

As such meetings always partake of the holiday character, people must assemble more or less in a jubilant condition, and meeting with others having the same objects in life, they cannot but benefit by the welcome they give each other. Meeting under such conditions, relieved from the worry of sitters and the smell of chemicals, men must benefit when they see those they read and hear about, and whose works they admire, even though no well of information

burst forth or no fresh fountain be discovered. If increased strength be gained by attending ordinary photographic meetings when the body is weary and the mind full of care, how much more renewed vitality may not be acquired by new scenes, fresh faces, and the renewal of warm friendship! I dwell more particularly on these social advantages, for if nothing else be gained, these are certain to be forthcoming. I am assured by those who attend similar meetings that these enjoyments are by no means to be despised.

But, granting for argument's sake that an annual photographic congress is desirable and practicable, is there any need to have a special organisation for the purpose? Cannot some existing means be utilized to provide photographers an annual gathering? As papers on photography are occasionally read at one of the sections of the British Association, could not that be adopted as a centre of union? I have thought of this, and before photography was so well established perhaps it might have been done; but it could not be accomplished now. Somehow photography, although the child of science, has never obtained a good foothold at the British Association, and, especially since the death of the lamented M. Claudet, each year it seems to have less. Scientific men, as a rule, do not understand photography. Its broad and general principles, of course, they grasp; but the minute details of its reduction to practice and application to commerce they properly ignore. But it is exactly these details and applications which are most interesting and valuable to photographers. Photography seems to have a little world of its own; and from what I know of the working of the sections I do not think any satisfactory nucleus could there be found. I think I should be supported in this view by the experience of those few photographers who are in the habit of attending the meetings.

That there is desire and a willingness for photographers to assemble annually, and even to travel a considerable distance to do so, is evidenced by the numbers who come from different parts of the kingdom to be present at the opening *soirées* of the parent London Society, and who attend at the technical meetings of this Society. It has been mooted more than once that the sphere of action of the parent Society of London might be enlarged so that, by an arrangement of annual peripatetic meetings, some such scheme as I am alluding to might be accomplished. I have my doubts of this. Although that Society has changed its name, I think it can never be other than a London Society; besides, it has sufficient scope in attending to its own business and duties.

I do not think that any local society can be so extended as to absorb the photographers who are scattered through the country. I think such an organisation as I am alluding to, while it might be composed of the men belonging to any of the societies, or to none of them, yet should be in harmony with all. It should trench on none of the local centres, but might be the means of causing additions of members and of information to all. It would probably hold its meetings at times and under conditions different to them, and its chief purpose should be the bringing within the fold a large number who now, from isolation and other causes, are debarr'd from personal photographic union.

It forms no part of my present purpose to suggest the exact business of this congress, nor how long it should be held—whether papers should be read, apparatus or appliances shown, processes worked, a technical demonstration made, or an exhibition held; but I certainly think its purpose would not be gained if a field-day or excursion were omitted, and, where the circumstances were favourable, I think a *soirée* should be held, where the ladies could participate in the enjoyment. If the idea be worth carrying out, all these details are the work of the managing committee. As to the good which would result from these annual reunions I am not willing to prognosticate.

I am not so sanguine as to suppose that we should be



immediately able to make our negatives much better or our prints more permanent—that we should be able to obtain better prices for our work, or raise the status of our profession; but I see no reason why any or all these objects might not be aided, and other advantages be obtained.

Our American brethren have set us the example in forming such an organization. In addition to their local photographic societies they have established a National Photographic Convention, and from the enthusiasm that prevails at their meetings the idea is eminently successful with them. We labour under fewer difficulties than they do; for, from their immense continent, many have to travel enormous distances to attend—even thousand of miles—and yet they seem so gratified with their results that, in separating, it is only with a determination to make their next meeting more agreeable and useful.

As I have already intimated, I bring the general subject for you and others to discuss. I feel that our present societies do not embrace all the photographic talent that exists. I think there are many good and true men that are lost to us, and which our present machinery cannot include. I feel also that something should be done to create a feeling of pride among ourselves that we follow an honourable profession and practise a beautiful art. I think that we have so many good and worthy men attached to the craft, that it is a pity they do not know each other better; and I humbly suggest some such scheme as this as an additional means of bringing them together, so that they may know and esteem each other. We hear and read of the pleasant time some of the societies enjoy when they have a field-day out, and I ask why cannot there be a general field-day? Why cannot we have on a larger scale a holiday in the woods? Suppose we suspend a meeting or two in the winter, and hold them in summer—in daylight instead of night; not in a dingy, yellow-lighted dark-room, but under the canopy of heaven. All this, and more, may be accomplished at a British Photographic Congress.

I have purposely abstained from suggesting how such a scheme should be started. I submit the broad idea only for general consideration. But I must remark that to be successful it should be so comprehensive as to embrace all, and not be the emanation of any special section. It must not be appropriated by any one society, nor be the rival of any. Whether independent men from all parts of the country should mature the plan, or delegates from the metropolitan and provincial societies, together with those who belong to no society, should unitedly bring it about, I leave for future consideration. I am inclined, however, to this latter method, as there are obvious advantages in meeting in the great centres where societies already exist.

Trusting that I have said enough to interest you, I leave the subject, hoping that you and others may so discuss it that profit and pleasure may be the result.

### Correspondence.

#### KENNETT'S PELLICLE.

DEAR SIR,—The experience of a "Portrait Painter," recorded in last week's NEWS, with regard to the extraordinary rapidity of the pellicle, exactly coincides with what I have stated on more than one occasion regarding my own experience and that of several of my friends. The excellent results have been many times exhibited and admired, yet the inventor is out of pocket by his discovery. The fault, is, however, I think, in a great measure due to Mr. Kennett himself, and as it is perhaps not yet too late to apply a remedy, I venture to propose one that may prove effectual. Let him raise the price of his pellicle to at least four times its present rate. It will show that he knows how to value his own discovery, and may lead others to do likewise. Photographers are very like the rest of the world—apt to be deceived by noisy pretenders, while they neglect

real merit, especially if it have the added sin of modesty. "Thy truth shall be thy dower," as poor old Lear expresses the amiable sentiment. Let Mr. Kennett try this one more experiment, and tell us the result.—Yours truly,

R. W. ALDRIDGE.

#### THE PHOTOGRAPHIC SOCIETY.

SIR,—Like your correspondent of last week, "L. N.," I have attended many years the meetings of the Photographic Society—in fact, ever since the time of Scott Archer. But I differ utterly from him in his opinion of the last meeting, and think the conduct of the President most admirable. It was quite a revival at Conduit Street to see a good spirited discussion all over the room encouraged and stimulated by a genial chairman. I fear "L. N." has a good deal of disappointment in store, for he may rely upon it a genuine revival has begun; and I trust the tone and manner of the last meeting may be the key-note for the others of the session, now that the long repression of discussion is so happily ended.—Respectfully,

SAMUEL FRY.

#### REPRODUCING NEGATIVES.—THE PLUMBAGO POWDER PROCESS.

SIR,—When I was at the Exhibition of Photographs a fortnight ago, I saw samples of reproduced negatives by the plumbago process. I at once saw the advantage of that method; and I again saw other samples at the Technical Exhibition at the Cambridge Hall, Newmarket Street, and I determined to try my hand at the process, with what result you will judge by the three specimens enclosed.

No. 1 was exposed for three minutes in the sun. No. 2 the same time, but the sky was very much more worked upon with the plumbago, which you will see has almost made it print white paper. No. 3 was exposed twenty-five minutes in a good light without sun, which you will see is much harder. This will show that almost any kind of negative may be made by regulating the amount of plumbago. I find that it is best to use rather a long soft camel-hair brush to apply the plumbago with, and go over the plate many times to get the best and softest negative; but if the sky is wanted a little more dense, then a shorter and thicker brush is best, so long as it does not scratch.

The plates were first coated with a thick plain collodion, and placed in water when well set; as soon as greasiness had gone by washing, the plate was taken out and drained, and then the sensitive mixture poured on same as collodion, and dried by the fire and placed on the negative in the printing-frame. The sensitive solution is the same that Mr. J. Werge gives, and I think it has been given in the NEWS; it is as follows:—

Dextrine ... ..	1 drachm
Sugar candy ... ..	1 "
Bichromate of ammonia ...	½ "
Water ... ..	5 ounces

The water is best slightly warm. The other part of the process has been given before in the NEWS, so that I need not go over it again. The films of these specimens were easily stripped from the glass and transferred to one coated with a thin solution of gelatine containing a grain or two of chrome-alum. Should anyone wish to see the prints, perhaps you will show them.—I am, sir, yours truly,

Scarborough November 11th.

GEO. WILLIS.

[The prints with which our correspondent favours us admirably illustrate his remarks, and show at once the excellence and simplicity of a process which can yield such results on the first trial after reading the description.—Ed.]

#### SUPPLEMENTAL LIGHTING.

DEAR SIR,—I send you the enclosed photograph showing the value of a preliminary exposure. The group was taken on the afternoon of the 10th inst., at 3.35 p.m. An exposure of two seconds through a plate of opal glass was first



given, the actual time of sitting being thirteen seconds, with full aperture No. 3B, all blinds in studio being open. Previous to this I had been giving twenty-five seconds, full aperture No. 2B, for cartes, with blinds partially down. You will agree with me that my chance of securing a picture without the opal was a very small one.—Yours very truly,

R. SLINGSBY.

[The example enclosed is a cabinet group of two children, admirably arranged, capital in expression, and most excellent as photography. These who know the unquestionably high quality of Mr. Slingsby's work will understand how good the picture is that satisfies him. A more satisfactory illustration of the value of pre-lighting could not well be desired.—Ed.]

## Proceedings of Societies.

### AMATEUR PHOTOGRAPHIC ASSOCIATION.

A Council Meeting of the above Society was held the 11th inst., at 12, York Place, Portman Square, T. SOPWITH, Esq., M.A., F.R.S., in the chair. The minutes of the last meeting having been read and confirmed, the following members were elected:—Heury V. D'Esterre, Allan H. Steuning, W. Horsman Kirby, G. Moore, Thomas Hutcheson, and A. L. Stevenson, Esqrs.

The SECRETARY then laid before the meeting the following prizes, which had been awarded at the last meeting:—First Prize—F. Beasley, Esq., a large silver goblet; W. S. Hobson, Esq., a silver goblet; J. H. Ravenshaw, Esq., a silver goblet; Col. Rooke, an oil painting in gilt frame by Masters; Sir J. Coghill, a large album handsomely bound in morocco; Capt. White, an oil painting by McEvoy; Major Allen, an oil painting in gilt frame by Masters; D. Knapping, Esq., a large album handsomely bound in morocco; J. McAndrew, Esq., a graphoscope; T. Brownrigg, Esq., an oil painting in gilt frame by McEvoy; G. Brewis, Esq., a large album handsomely bound in morocco; Capt. Lewis, an album handsomely bound in morocco; R. O. Milne, Esq., an album handsomely bound in morocco; Capt. Toke, an album handsomely bound in morocco; R. Murray, Esq., an album.

Certificates of Honourable Mention were awarded to W. G. Hauter, Capt. Layton, J. W. Richardson, Rev. W. E. Hancock, and Mr. Hancock. A. J. MELHUIS, Hon. Sec.

### SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual meeting of this Society was held on the 12th inst., the Rev. F. F. STATHAM, M.A., President, in the chair.

Messrs. Reid and W. F. Attwood were elected new members.

The next meeting of the Society being the annual one for the election of officers, the names of several gentlemen were put in nomination for the offices of Vice-presidents and Council. These will be balloted for at next meeting.

Mr. Jabez Hughes then read a paper "On the Establishment of a British Photographic Congress" (see page 560).

This gave rise to an interesting conversation, and a committee of representative photographers was appointed to ascertain the feelings of photographers throughout the country relative to the carrying out such a scheme as that proposed by Mr. Hughes. The Chairman, Mr. Spiller, and other gentlemen spoke in favour of the proposed movement.

It was intimated that at the next meeting, after the election of office bearers for the ensuing year, Mr. Aldridge would read a paper "On the Practice and Principles of the Great Portrait Painters." And it was further intimated that the annual dinner of the Society would be held on the 17th proximo.

The meeting then adjourned.

## Talk in the Studio.

LANTERN READINGS.—We have received from Mr. York an interesting series of details—historical, statistical, and descriptive—of various London institutions, intended as lantern readings to accompany the exhibition of his admirable series of London views. The idea is a capital one, and might with great advantage be carried out in connection with various other series of lantern slides. The mass of information Mr. York has compiled for the London series is at once interesting and valuable.

FANCY MASKS.—We have been favoured by Messrs. Rivot and Fontes with some examples of fancy masks for card pictures, the purpose of which is to print round a medallion picture a tinted margin, plain or with some neat simple design. Many of them are exceedingly excellent and effective. The texture of rough drawing-paper, or that of shagreen, is well imitated in some; a variety of fine diaper patterns are on others, all neat and in good taste. They will admirably facilitate the production of effects which give considerable finish to a portrait.

PHOTO-LITHOGRAPHIC ILLUSTRATION.—We have before us a number of the *British Architect* containing some good photographs of architectural drawings. On the cover it is stated to be "the only journal in the world containing permanent photographs in printer's ink." This is, we think, a mistake. There is an illustrated journal in Canada in which the "Leggotype process"—a method of photo-mechanical printing—is solely used; and the *Daily Graphic*, published in New York, is illustrated, we believe, by a similar process. There are, besides, in England several periodicals which contain frequent illustrations produced by photo-mechanical printing processes.

PHOTOGRAPHIC NEWS IN THE WEST.—Our new contemporary and namesake, the "Western Photographic News," has forwarded us some further numbers, full of interest, and possessing all the promise of an energetic successful enterprise. It deals much and intelligently with the business aspects of photography, especially in the wide districts to which it especially appeals.

A PHOTOGRAPHER'S RESPONSIBILITY FOR PAINTINGS ENTRUSTED TO HIM.—A curious case was tried in the Lord Mayor's Court on Wednesday, when an action was brought against the Stereoscopic Company for the value of a painting left with them to varnish. The case is reported as follows in the morning papers:—This was an action to recover the value of a portrait of the plaintiff's daughter. The defendants paid £5 into court, and pleaded that that sum was sufficient to satisfy the plaintiff's claim. Mr. Turner was counsel for the plaintiff; Mr. Kemp was for the defendants. It appeared from the evidence of the plaintiff that about twenty years ago he was living in Calcutta, and his two children, son and daughter, were at school at Surbiton. He was desirous of having their portraits in his possession, and sent instructions for them to be painted by an artist named Fisher, who, when the pictures were completed, forwarded them to India, and charged fifty guineas for the pair. Upon the plaintiff's return from India to this country he brought the portraits with him and took them to the defendants to have them freshly varnished, and have any defects made good. They agreed to undertake the matters at a cost of £1, and the plaintiff left them for that purpose. After the lapse of some considerable time the plaintiff applied for his pictures, and received an answer that the portrait of his daughter could not be found. The plaintiff now sought to recover £75, viz., £25 the sum he had paid to the artist, and £50 compensation for the loss of his daughter's portrait, which, he contended, it was impossible to replace, in consequence of its having been painted so long ago, and that its loss had deteriorated the value of the companion picture. For the defence it was admitted that the pictures had been delivered to the defendants under the circumstances detailed by the plaintiff, and that the portrait of the daughter had been lost. They were given to a man in their employ to carry out the plaintiff's instructions. The man was suddenly taken ill whilst he had them in his possession. His landlord distrained for rent, and amongst other things sold the two pictures in question. The man had subsequently died, and the picture of the plaintiff's son was afterwards found by the defendants, purchased by them for £1, and returned to the plaintiff, and they offered to paint a portrait of the daughter at her present age. The plaintiff had refused their offer, and the defendants considered that the sum of £5 was the outside value of a picture similar to the lost one. Mr. Turner, on behalf of the plaintiff, admitted that an offer had been made to the plaintiff by the defendants to colour a photograph of the plaintiff's daughter if sent to them; but he contended that that was not a sufficient compensation to him for the loss of the portrait of his daughter, taken many years ago, and to which he attached great value. Mr. Kemp contended that the value of a lost picture was what it would have fetched if offered for sale, and submitted that the amount paid into court was sufficient under the circumstances. The Jury ultimately returned a verdict for the plaintiff—damages



£25. Subsequently, upon the application of Mr. Kemp on behalf of the defendants, the Common Serjeant granted a rule nisi, calling upon the plaintiff to show cause why the verdict should not be set aside and a new trial granted on the ground that the damages were excessive.

**A SECRET EMULSION PROCESS.**—Some months ago we referred to a circular received from Japan, in which the writer, H. Hammonstede, announced a new process without silver bath, with bromide or uranium, and more sensitive than the wet process, a couple of very fine prints being sent in attestation of the excellence of the results. We learn from the *Photographic Times* that Mr. Hammonstede has arrived in New York, and is offering his emulsion process to the profession if one hundred subscribers at £5 each will combine to purchase. The Photographic Section of the American Institute have appointed a committee to investigate and report with a view to recommending the purchase if the report be favourable.

**MARRIAGE.**—It will interest our readers to know that on the 12th inst. Marie, the only daughter of Mr. England, was married to Frank W. Carpenter, only son of Dr. J. E. Carpenter, a gentleman whose songs are sung wherever the English language is spoken.

### To Correspondents.

**ONE TROUBLED.**—The opaque, comet-like markings, with transparent nuclei, in your negative, most probably proceed from turbidity in the collodion. Floating particles of some insoluble substance, setting up increased reduction in the immediate neighbourhood, and so causing opaque streaks, the particle itself being dissolved and removed in the fixing and washing, and so leaving a transparent spot in the middle of the head or nucleus of the comet. It is probable that allowing the collodion to rest and subside for a day, subsequently decanting it, not too close, will remove the trouble.

**G. W. R.**—We regret that we cannot give you information as to the facilities for obtaining photographic goods in Queensland. Stock houses will doubtless exist there to supply the wants of photographers, but we are not familiar with them. In any case it will be wise to take a stock for immediate use with you. You will doubtless obtain information as to fresh supplies when you have been there a short time. You can receive the *News* by post regularly; we send to various subscribers. Our Publishers will give you full particulars. We believe that prepayment of 17s. 8d. will secure the *News*, delivered by post in Queensland, for twelve months.

**J. B. (Bombay).**—There is no book published on the subject of retouching; but there have been many carefully detailed articles in the *News* and *Year-Books* on the subject, giving all the information that can be given in writing. The only additional aid would consist in personal instruction, which, of course, you cannot readily obtain in India. You will find a great number of articles on the subject in our last half-dozen volumes, and in that for 1869 some especially detailed practical instructions; and in the *Year-Books* for 1869 and 1870 you will find similar articles.

**H. P. SWAINE.**—The stain in the print is doubtless the result of hypo, and suggests that insufficient washing was the cause of the film splitting. We fear that you would risk losing the film altogether in any attempt to remove the varnish, and refix. We do not think it probable that the negatives will fade. The chief danger to which it will probably be subject is staining in any place where a trace of hypo is left from contact with the silver on sensitive paper. To avoid this risk, you may adopt two or three precautions. Take care that the sensitive paper, placed in contact with it, is not damp, or place a sheet of tracing paper between the negatives and paper so as to avoid direct contact.

**EDWIN OSBORNE.**—Thanks. We have read the opinion with interest. As, however, it is purely a business document, it should appear in our business columns if published. It does not legitimately come within the scope of our literary columns.

**G. LEWIS.**—We do not know of any maker of blood albumen; it is chiefly used by dyers, we believe. In photography it has been used to some extent, we believe, in preparing albumenized paper. Its only advantage over ov-albumen is cheapness; and in the preparation of dry plates, and in use for preliminary coatings, the small quantity required would render this consideration unimportant. There is generally a slight opalescence in the albumen preservative solution, but we are unable to say whether it would be entirely absent in a solution of the dried blood albumen.

**CERBERUS.**—It is difficult to say what is the best mode of publishing a work of which we know nothing. Your best plan will be to obtain one or two estimates for the printing of a given number in a given style. You may obtain a local estimate, and you may send up the manuscript to the Printers of the *Photographic News*, and they will give you an estimate. In any case they will undertake to publish it for you on the usual terms, details of which they will furnish you on application.

**IGNORAMUS.**—The most probable cause of the pinholes in the use of a bath overcharged with iodide. The negative suggests that the bath was turbid, charged with innumerable floating particles, which, settling on the film, cause the minute transparent spots. The plan of iodizing by pouring collodion into the bath is very undesirable, as you are uncertain of what you are adding. For instance, the collodion probably contains bromide, and thus bromide of silver is formed in the bath, and as it is not soluble, there it will remain in floating particles, causing mischief. Sometimes a similar effect to that sent will arise from the use of glass which has contained old varnished negatives which have been cleaned off with nitric acid, or some similar detergent.

**R. P.**—The set of lenses you describe belong to a magic lantern. The two larger lenses are the condensers, the smaller single lens being the enlarging lens. The plano-convex lens should be placed with its plane side next the source of light, and the double convex immediately behind the plano-convex, not quite in contact with its convex side. If you think of enlarging by artificial light, this condenser may answer pretty well; but a larger and more powerful condenser is generally used with the solar camera. The best mode of enlarging, however, does not need any condenser. It consists in obtaining from the negative a good transparency, and from the transparency an enlarged negative, simply using the white light of a northern sky. We have given full details of this method, with which you are doubtless familiar. A gelatine film will give you a very fine transparency, well suited for the purpose of producing an enlarged negative. The *Year-Books* for 1871, 1872, and 1873 are in print, and may be obtained by post, price 1s. 2d. each.

**H. S.**—We do not know the address.

**CAPTAIN STRETTON.**—Thanks. We shall probably use the remarks in our *Year-Book*. Several Correspondents in our next

### METEOROLOGICAL REPORT FOR OCTOBER.

BY WILLIAM HENRY WATSON.

Observations taken at Braystones, near Whitehaven, 36 feet above sea level.

Date.	THERMOMETER.			BAROMETER.			Direction of Wind at 9 a.m.	
	Morning.	Noon.	Night.	Morning.	Noon.	Night.		
1	56°	60°	53°	29.54	29.50	29.41	S.	Fair and sunny.
2	53	53	52	28.98	28.96	28.96	S.W.	Showers a.m. and p.m.
3	52	54	50	28.95	29.10	29.13	W.	Rain a.m. and p.m.
4	50	52	—	29.13	29.22	—	W.	Fair, generally gloomy.
5	44	52	52	29.65	29.77	29.62	S.W.	Fair, generally gloomy.
6	54	55	52	29.42	29.29	29.02	—	Rain all day.
7	52	56	48.5	29.03	29.11	29.46	—	Showers a.m. and p.m. Windy.
8	42	57	48	29.71	29.74	29.60	E.	Fair, and generally sunny.
9	53	54	47	29.51	29.61	—	W.	Showers a.m. Gloomy all day.
10	54	58	53	29.67	—	29.72	S.W.	Rain a.m. Gloomy all day.
11	56	53	54	29.82	29.82	29.68	S.	Rain p.m. Gloomy all day.
12	56	53	56.5	29.87	29.82	29.78	—	Rain early this morning. Gloomy all day.
13	51	60	44	29.74	29.78	29.81	N.	Fair, but gloomy.
14	52	54	48	29.77	29.60	29.3	S.W.	Fair. Gloomy.
15	51	60	54	29.31	29.11	29.22	S.	Rain this afternoon. Heavy at night.
16	51	—	48	29.50	—	29.64	S.E.	Fair, clear.
17	50	57.5	54	29.42	29.47	29.60	S.	Rain a.m. Gloom all day.
18	56	56	54	29.62	—	29.51	S.	Rain a.m. and p.m. Windy.
19	52	48	50	29.51	29.68	29.90	S.W.	Rain and sleet a.m. and p.m.
20	51	56	56	29.90	29.89	29.82	W.	Rain a.m. and p.m.
21	51	16	49.7	29.12	29.29	29.33	—	Rain a.m. and p.m. Strong wind.
22	48	—	46	29.50	—	29.61	S.W.	Fair, generally gloomy.
23	48	50	50	29.82	29.87	29.89	—	Fair, generally sunny.
24	50	53	52	29.81	29.73	29.61	S.	Rain this evening 7-40 p.m.
25	54	54	51	29.46	29.60	29.85	S.W.	Rain a.m. Meteor.
26	49.6	54	56	29.89	29.77	29.73	S.W.	Rain all day.
27	56	—	48	29.77	29.73	29.93	—	Rain this morning.
28	47	50	49	29.98	29.96	29.95	S.E.E.	Rain this evening. Cloudy all day.
29	49	51	49	29.97	30.00	30.10	S.W.	Rain p.m. Blue haze a.m.
30	50	51	36	30.29	30.26	30.31	N.	Fair all day, generally cloudy.
31	38	50	48	30.25	30.23	30.15	N.E.	Fair all day, clear and sunny.

From the above I arrive at the following:—

	Mornings.	Noons.	Nights.
Maximum temperature	... 56°	... 60°	... 56.5°
Minimum ditto	... 38	... 46	... 36
Mean ditto	... 50.8	... 51.1	... 49.9
Mean ditto of whole	... 51.2	... —	... —
Number of days on which rain fell	... 20	...	...
Number of fair days	... 11	...	...
Number of fair days on which it was sunny	... 4	...	...
Number of fair days on which it was gloomy	... 7	...	...

By referring to the above observations, it will be noticed that the barometer was very unsteady, and that the weather was very unsettled during the month.

Braystones, near Whitehaven, November 3rd.



## The Photographic News, November 27, 1874.

## PHOTOGRAPHY IN AND OUT OF THE STUDIO.

## THE TRUTH ABOUT PHOTOGRAPHIC PORTRAITS.—REPRODUCTION OF CHINESE BY PHOTOGRAPHY.

*The Truth about Photographic Portraits.*—Artemus Ward's saying, that if the leopard can't change its spots, you can do it for him, now and then comes back to you very forcibly in looking over many a photographic album. The sun cannot lie, we know, but somehow we can avail ourselves of its aid in practising a little deception. When, for instance, our friend Tittums, who stands about five feet nothing without his shoes, proudly shows us a portrait of himself that has been taken abroad, and which he vows is as far above the work of English artists as the sun is above the moon, we see that it is not so much the beauty of the work, or the grace of the pose, that has taken Tittum's fancy, but rather the general effect, which represents our friend as being rather over than under the middle height. Tittums, of course, orders a gross of the portraits at once, for he'll have no more of your rubbishy English photographs, and keeps a supply of them in his pocket-book, to be shown on every occasion. "Here, just look at this," he says, for he knows you are interested in photography; and you, who have seen the picture already a dozen times, say, as a matter of course, that, by Jove, you have never before seen anything like it. The artist has merely photographed Tittums in the presence of a suite of diminutive furniture, and hence the happy effect. Other photographers are a little more delicate in their handling of a sitter; they fear that miniature surroundings may be offensive to their model; and so they take a three-quarter sitting portrait. After focussing a while, looking at the lighting, drawing a blind here and there, giving the flower in the vase a twist, &c., they say, "I think if you were seated a little higher, it would be as well;" and a couple of big books, which happen, most fortunately, to be quite handy for the purpose, are placed on the chair, and you hoist yourself once more in position. Of course, the result is most satisfactory, for when the proof comes home, you see a tall, well-built individual leaning back in the chair in a commanding position. Cunningham, the photographer, understands human nature quite as well as portraiture, and you like your picture so much, that years after, instead of having another taken, you prefer rather to have the old one copied. There never was such a prominent feature as our friend Miss Sneezum's nose; and not only is it very long, but (so some people say) it is exceedingly crooked into the bargain. And yet we cannot see how such a false report got abroad, for Miss Sneezum's half profile portrait, which we have seen (we mean the one where she is poring over a book) represents that lady's nose as purely aquiline; and we, as a photographer of some experience, can vouch for the absence of the retouching pencil. It is all very well for gossiping friends to shake their heads dubiously, and smile as they look at the portrait, but, as we tell them briefly, and with some warmth, "Here is a direct photograph, taken by a well-known, honest photographer; now, are you going to believe it, or do you mean to tell me that the sun can reflect anything but a true shadow upon the sensitive plate? If the nose is crooked, point out the defect, for goodness sake, and don't go on maligning a poor woman without reason." Of course, they say that if the photograph had been taken from the other side, we should soon see whether the nose were crooked or not; or if there had been a little more light just in that part, the defect would have been apparent enough; but these are, of course, mere excuses. A man who will doubt the truth of a photograph, it is no good arguing with. If he had a flattering portrait of himself taken, he would be the first, no doubt, to testify to its absolute truth. Painters, we know, always represent their models in what they are pleased to term

"a happy moment," and photographers would be imbeciles indeed if they did not, in their pictures, show their sitters "at their best."

*Reproduction of Chinese by Photography.*—Photo-lithography has been aptly used, we hear, in copying Chinese characters, or writing, the difficulty involved by the intricate nature of the letters being thus very speedily got over. It appears that the large pictures from the *British Workman* have been considered especially suitable for circulation in China, and these have been printed from blocks upon wall paper with which the Chinese are to decorate their rooms. In proximity to each picture is some letter-press descriptive of the subject, the writing having been executed by a Chinese scholar with brush and pigment in the same way as native authors produce their works. Obviously the rendering of this in type would be an expensive, if not an almost impossible, undertaking in this country, but the camera solves the difficult problem in an instant. A photographic copy, moreover, has the advantage of being an absolute *fac simile* of the rounded and easy strokes of the author's brush, which are, it is said, much more inviting to the Chinese than the harder and more angular lines imprinted by metal type. It is, therefore, a singularly happy idea to have made use of photography in such a matter, for, putting on one side the expense thus saved in the production of the work, the fact that the same will have rather a native than foreign appearance to the Chinese will doubtless aid very much in its circulation throughout the country.

## ON THE PHOTOGRAPHIC TRANSPARENCY OF VARIOUS BODIES, AND ON THE PHOTOGRAPHIC EFFECTS OF METALLIC AND OTHER SPECTRA OBTAINED BY MEANS OF THE ELECTRIC SPARK.

BY W. A. MILLER, M.D., LL.D.\*

## § 3. PHOTOGRAPHIC EFFECTS OF THE ELECTRIC SPECTRA OF DIFFERENT METALS TAKEN IN AIR.

a. *Pure Metals.*

25. I have spent a considerable time in endeavouring to procure exact photographs of these spectra, inasmuch as the spectrum of a metal is a constant not less important than its density or its fusing point, and it frequently furnishes the means of identifying an element under circumstances in which no other method at present known is practicable.

Kirchhoff, in his elaborate and masterly researches on the constitution of the solar spectrum, has, as is well known, published, in minute detail, a map including the lines of a large number of the metals. He has, through a limited portion of the visible spectrum, laid down the position of the bright lines of certain metals coincident with particular dark lines of Fraunhofer, with a precision best appreciated by those who have followed him with most minuteness.

Much yet, however, remains to be done, even for the rays which fall within the range of the visible spectrum; and for those which are beyond the limits of ordinary vision the whole yet remains to be examined.

The lines of each spectrum are so numerous and so close together that it would be impossible, without a sacrifice of time that would scarcely be justifiable, to obtain accurate impressions of them by eye-drawing. Indeed, except by the process of photography, these lines can only be rendered visible by the aid of a fluorescent screen, under which circumstances the minute details are almost necessarily lost, even by the most careful observer.

The photographs of these spectra were obtained by an arrangement of the quartz prism and lens, identical with that already described (6), wires, plates, or irregular fragments, of the metal, according to circumstances, being supported in brass forceps connected with the secondary



wires of the induction-coil. The interval traversed by the spark was, in each case, about a quarter of an inch, and the slit was placed at a distance of half an inch from the line traversed by the spark.

The specimens of gold, silver, mercury, copper, bismuth, antimony, zinc, tellurium, thallium, and lithium employed, are believed to have been pure. The tungsten, molybdenum, chromium, and manganese, were reduced from pure oxides in crucibles lined with charcoal. The other metals were as they are furnished in commerce as pure.

26. Each metal gives its own distinctive spectrum; but it is remarkable that these differences are not obvious in the less refrangible end. The true metallic spectrum, when the sparks pass in air, is, in fact, combined with that due to atmospheric air, as has already been pointed out for the visible rays by Angström and by Alter. The photographic lines of the air-spectrum are most marked in the less refrangible portion, whilst the characteristic lines of the metals are particularly evident in the more refrangible parts. Hence, the photographs which I formerly obtained by the use of a prism of bisulphide of carbon, which transmits rays of low refrangibility only, represent, as I then correctly pointed out, lines which are chiefly atmospheric, and, consequently, they exhibit appearances which are almost identical, whatever be the metal employed.

In describing the spectra of the different metals, I shall employ the same arbitrary scale that I have hitherto used in this paper.

27. It will be observed that generally the lines, as they advance towards the more refrangible extremity, become less intense in their central portion, until, towards the extreme limit of the spectrum, the two marginal ends of the lines alone are visible, though these terminations are often rather intense. Indeed, throughout the whole length of the impressed photograph, the marginal extremities of the metallic lines leave a stronger image than their central portions, as though the incandescence of the volatilized portions of the electrodes, owing to their high radiating power, did not continue sufficiently intense during their transfer across the interval between the two electrodes to enable them to produce a continuous line. Evidently, the cause of this diminution of action operates more powerfully upon the more refrangible rays; and a higher temperature, as the experiments of other observers have abundantly proved, is necessary to the production of radiations of these high degrees of refrangibility.

Exceptions to this remark occur in the lines due to the atmosphere; this is well seen in the strong line at 110.5, which is in marked contrast to some of the metallic lines in its vicinity, particularly in the spectrum of silver, where this nitrogen-line is included between two pairs of very intense lines due to the metal itself, and which are each interrupted in the middle.

In order to abbreviate the description of the various spectra, I shall generally speak of these interrupted lines as "dots;" they, indeed, constitute the characteristic features of the different metallic spectra. These dots, if the image be exactly in focus, may usually be seen to consist of groups of very short lines closely aggregated. This is well shown in some parts of the spectrum of silver; and it is less distinctly shown in the spectrum of palladium, of copper, of antimony, and of cadmium. These spectra were taken with the screen, lens, and prism at a distance from the slit, different from those with which the other impressions were procured; some parts are consequently out of focus, but the details of other portions are shown more fully.

As might be anticipated, the spectra of the more volatile metals are the most intense—those of bismuth and antimony, of cadmium, zinc, and magnesium being especially remarkable in this respect.

A certain similarity is also observable in the spectra of allied metals, as in the case of the three metals last mentioned, also in those of iron, cobalt, and nickel, of bismuth and antimony, as well as of chromium and manganese.

It should further be observed that, in estimating the apparent length of the different spectra, considerable difficulty is frequently experienced, owing to the extremely faint impressions which the most refrangible rays commonly occasion; in some experiments, this portion of the spectrum with the same metal appears to be longer than in others made under apparently similar conditions.

The strongly marked character of the spectrum of silver, and particularly the renewal of its intensity towards the more refrangible end, rendered it very appropriate for the purpose of testing the diacritic quality of different media; and accordingly I have used it more extensively than any other metal in the experiments already detailed upon this subject.

*Thallium.*—The spectrum of thallium (for a specimen of which in a pure state I am indebted to the kindness of Mr. Crookes, its discoverer) is particularly interesting, as in its visible portion it is remarkably simple, the single intense green line being the only one visible, even when heated in the intense flame of the oxyhydrogen jet. When, however, the sparks of the secondary coil are transmitted, not only do new lines make their appearance in the visible spectrum, but also in the extra-violet portion. This character of its spectrum\* separates thallium from the metals of the alkalis. In the less refrangible portions are two strong groups of lines at about 103 and 106; three other groups occur at 116, 121, and 126 respectively, the two first less intense, the third of about the same strength as the first pair of groups. Several feebler pairs of dots follow; and the spectrum terminates with four nearly equidistant groups, commencing respectively at 136, 141, 145, and 151; the first of these groups is very strongly marked, the others are fainter, but of nearly equal intensity.

*Mercury.*—Experiments were made with this metal by soldering a platinum wire into a small glass tube which was filled with mercury and connected by means of the platinum wire with one end of the secondary wire of the coil; the other electrode consisted of a platinum wire. The spectrum obtained exhibited few lines, excepting those due to the mercurial electrode. The never-failing nitrogen line, 110.5 was evident; but there were numerous strong lines due to the mercury, the most distinct of which are those at 104, 114.5, 117.5, 119.0, 122.5, 131.0, 138, 156, 159, each of the two last forming a strong broad group of dots, the last group terminating the spectrum at 161.0.

*Magnesium.*—This is another remarkable spectrum. An intense group of lines commences at 101, at 115 a bright group of dots is seen, and between 119 and 126.5 are three remarkably intense groups of lines; the first of these comprises at least four strong lines, the second group three, and the third consists of eight or ten separate lines. This last is the most intense group that I have met with in the course of these experiments. Beyond this the spectrum is prolonged by a faint tail, which is strongest along the edges, and nearly vanishes midway between them; this tail disappears a little beyond 150.

56. It is unnecessary to give any details of experiments made with electrodes one of which consisted of one metal and the other of a different metal. Under these circumstances, the lines starting from the side corresponding to each metal are identical with those furnished by the particular metal. This mode of making the experiment is therefore frequently convenient when it is desirable to compare the spectrum of any given metal with another selected for comparison. When the difference in volatility between the two is extreme, as when platinum is opposed to mercury, it may happen that one spectrum only is seen, the lines starting from one edge of the photographic impression, and terminating at irregular distances before they reach the opposite edge.

(To be continued.)



## THE PRACTICAL PRINTER IN AMERICA. XIV.

### FITTING VIGNETTE MASKS TO THE NEGATIVES FOR PRINTING.

IN fitting vignette masks to the negatives for printing, there are several things to be thought of and taken into consideration.

Due regard should be given to the background, for generally one side of it is darker than the other, especially when the lighting is after the so-called *Rembrandt*, for then it is generally the custom to have the background on the lighted side of the face darker than that on the other side, and *vice versa*, so as to give boldness and vigour to the prints from such negatives. When the background is as described, the vignette mask should not be placed so far on that side of the figure that has the darkest side of the background, because the vignette on the print will not be even, but one-sided. The vignetter should either be placed more over towards the other side, or, if you do not wish to print so far on that side (the lightest), then you can paste a piece of dark paper on the vignette mask, in such a way as to cover up a great part of the dark side, and then upon printing it face to the sunlight, the prints from such negatives will be much better, being more evenly vignetted. Oftentimes it will not in every particular answer to paste this paper on *all* of that side, because it may make the drapery print badly.

When, in lighting his subject for the shadow effect, the operator allows the light and shade to act strongly on the drapery as well as the face, then the former will print light on the side where the background prints dark, and when we place paper on the dark side of the background to prevent it from haloing out too far, we thus, in a measure, if not careful, prevent this already light side from printing so much as it ought. To remedy this, it is often necessary to cut out still further the vignette mask where the draperies are, in such a way as to permit all to print nicely on that side, without permitting the background to print out too far. Thus the outside of a vignette



Fig. 1.

mask will often have a very bad appearance as regards the shape, sometimes having the shape shown in fig. 1.

Upon looking through such a vignette mask on to the negative within, it would appear at first glance as though the vignette mask was tacked very carelessly on to the printing frame, and not until we examine the negative by holding it up and looking at it, will we discover our mistake. In changing the shape of the vignette mask, it will be found to be a difficult thing to do if it should be found to be made of wood.

Partly for this reason, and partly because many negatives require a little different vignetter, I have always used common and average thick pasteboard for vignetting the common card and imperial negatives. For larger negatives, however, I use wooden vignette blocks, and if there is anything needed to be done as described above, I make the print in the usual way, and before removing it from the frame, move the block in the direction needed, and shading the rest of the figure with a cloth, print it as required. As there are hardly ever more than two or three vignette prints to be printed from such large negatives, I prefer to do so, being less troublesome than to change the wooden block, and thus ruining them for future use; but for card and imperial negatives, when there are often

dozens to be printed, I like to have a vignette mask expressly adapted for that particular case, and then I can print right along, and finish the order without any more trouble, after having obtained the first satisfactory print.

Another advantage in using average thick pasteboard is because greater softness is imparted thereby to the halo of the vignette, if the pasteboard is raised to a proper distance from the negative.

The great disadvantage of many of the wooden vignette blocks is simply this: The opening of the under part of the blocks is not bevelled out far enough for the purpose of obtaining soft halos to the prints. When we fasten such a vignette block on to a printing frame for vignetting, the under part of the block rests on the negative, and when the opening of the block is not bevelled out far enough, the diffused light will cause a too abrupt edge to the halo. This is the reason why soft halos are so hard to obtain with wooden vignette blocks, and there are some printers who cannot obtain them, try as hard as they will. On their informing you that they never could obtain soft halos, if you were to ask the question, "What do you use in vignetting?" their reply in most cases would be, "Oh! I have had some nice vignette blocks made for me, but I cannot obtain soft halos, even if I place *two* tissue papers over the vignette."

When the block is not bevelled out far enough, the diffused light entering will cause the sharp edge to print just where the block touches the negative. This can be prevented by bevelling the block out further, and also softer. The light, as it enters through the tissue aperture, will diffuse out almost exactly as far as you are able to see under the block by applying your eye close to the vignette block and looking under. If, while looking, you see the edge of the bevelling of the block touch the negative, you can depend upon not obtaining soft halos until you remedy the defect in the blocks. When you have new vignette blocks made, test with your eye as above.

But softness to a halo cannot be obtained so nicely with a block placed upon the negative, as described above, as it can by the use of some common cardboard, with an aperture suitable to the size of the negative. In this case there is not anything to stop the diffusing of the rays of the sun, as there is in the wooden vignette block, but the light diffuses out nicely and softly, the softness depending upon the distance of the cardboard from the negative.

A few words about the distance of these vignette-masks from the negative. Never place the cardboard nearer than a third of an inch from the negative, unless in case of some faulty place that is to be avoided in vignetting the negative. If the figure is to be illuminated, so as to get rid of a defect in the background, then it is best to make a light proof of the negative, and cut close in and around the figure, being careful not to cut in too close to the neck, so as to give an ugly look to the vignette, which will always look like the cut-out, although, perhaps, it may have a softer outline (fig. 2). Place the outside of the pieces cut

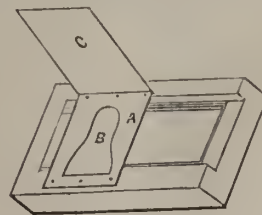


Fig. 2.

on to a suitably sized piece of cardboard, and cut out the piece B, which is cast away. Place the piece A over the background of the negative, about half an inch from it, on to the raised outside of the printing frame, and after adjusting it properly, then tack it in its place. Paste a piece of tissue paper, C (French copying-paper is the best for printing purposes, being entirely free of the minute holes which



are so characteristic with the English tissue) over the cardboard, so as to permit diffused light to pass through the aperture when you place it out to print in the diffused rays of the sunlight. If, upon examining the print, the halo does not blend out soft enough, then place the cardboard away a little more from the negative, and print again. If it blends out too far, place the cardboard a little nearer to the negative.

The manner in which I obtain these different degrees of depths from the negative to the cardboard without much trouble is, if the printing masks are not raised in the making of them, to have made, and ready at hand in case of need, some pieces of basswood, of different thicknesses, which can be tacked on to the sides of the frame when needed, and the cardboard tacked on to these. Have plenty of these pieces close at hand, and in tacking them on do not use more than a couple of tacks for each piece.

If you wish to obtain a halo to a vignette that will commence close to the head to blend out and extend out to the very edges of the card, both in the background and drapery, then the distance of the cardboard from the negative should vary from a half to a full inch. The opening of the cardboard should be about the ordinary size of a vignette aperture. The greater the distance from the negative to the vignetting arrangement the smaller should the opening of the vignette be. Never use ground glass in vignetting when you desire soft halos; but tissue paper should be used, and a good quality at that.

Always be sure that the head of the negative is balanced by having plenty of the body show. In your mind's eye draw a line from each side of the face down through the body. The shoulders should always show from a third to a half of the length of the face beyond this imaginary line, and the length of the body should rarely be less than one and a quarter times the length of the head. There are many things sometimes to prevent having the above named proportion to the vignette, but always have it if possible.

The Wymouth vignette papers are undoubtedly superior to anything that has ever been devised for the purpose, and any failures in using them have no doubt arisen from the want of proper care and judgment on the part of the printer, rather than any fault in the papers, or the idea on which they are gotten up. Of course all negatives cannot be treated the same in this respect, any more than all can be printed equally well on one sample of silvered paper. A negative with a light background may print well with the vignette paper placed in contact with the glass, while one that prints a dark ground would require the paper to be separated from the glass a sufficient distance to prevent its printing a hard or abrupt edge to the vignette.

Before closing this chapter I will attempt to state what the beauty of a vignette consists in. Sometimes vignettes are meant to supply the place of shadow—as when in



Fig. 3.

photographing crosses—then we vignette in such a way as to have a shadow on one side of it (see fig. 3).

The beauty of such a vignette consists in the artistically printed shadow; and when we examine such a print we experience considerable pleasure in seeing the soft shadow caused by the cross, whereas if it were not there, or the shadow were on both sides, it would create anything but

pleasure. Then, again, the beauty of vignettes in ordinary portraits is the soft blending from quite dark, in the drapery and close to the figure in the background, to a very soft and almost indistinguishable edge on the outer part of the carte-de-visite, for which, and the imperial, this style of vignetting only is advisable.

## ON ALCOHOLIC ALKALINE DEVELOPERS.

BY PROFESSOR H. VOGEL.\*

ORDINARY alkaline development is undertaken with an aqueous solution of pyrogallie acid, ammonia, or carbonate of ammonia (or caustic potash), together with the addition of a small quantity of bromine salt. It is usual to moisten the dry plates first of all with alcohol, so as to render them more permeable to the developer; they are then washed, and the developer is applied. This washing operation causes a little trouble and delay, and I have sought to obviate these by employing an alcoholic, in lieu of an aqueous, developer, which may be applied at once, without any previous washing of the plate.

I mixed 90 cubic centimetres of alcohol, of 85° strength, with 10 cubic cents. of liquid ammonia, and added to this, for developing, pyrogallie acid and bromide of potassium, according to the following proportion:—

Ammonia solution	...	...	8 cubic cents.
Pyrogallie acid solution	...	...	6 to 24 drops
Bromide of potassium, or bromide of ammonium solution	...	...	2 to 3 drops

The pyrogallie acid solution is made up of:—

Pyrogallie acid	...	...	1 part
Alcohol	...	...	10 parts.

The bromide of potassium or ammonium solution is made up of:—

Bromine salt	...	...	1 part
Water	...	...	4 to 5 parts.

The plate is moistened with alcohol of 75°, first of all (with alcohol, therefore, of the same strength as the alcohol-ammonia solution,—an important point), and then, without being washed, treated forthwith with the developer.

The result I obtained by working in this way was, as regards clearness and uniformity, perfectly astonishing. I usually work with bromide of silver plates, which are sensitized in the ordinary silver bath, and washed, and with these I find aqueous development scarcely suitable, for fogging of the plate is apt to set in, as well as the formation of patches near the margin, when the finishing of the negatives has to be left to an assistant. The fog may, it is true, be obviated by a plentiful addition of bromide of potassium, but, unfortunately, the lack of bromide is found out too late, when the picture is already too much developed. These difficulties are overcome by the employment of an alcoholic developer. The picture, it is true, appears more tardily, as under the influence of an aqueous developer, and not with the same intensity, but then it is more under control. In under-exposed plates the bromide of potassium may be left out altogether, and yet, by the application of a strong alcohol, an absolutely clear plate, free from fog, be obtained. If a dilute alcohol solution is used, the development goes on more briskly, as under ordinary circumstances, but the result is not so clear. If, on the other hand, very strong alcohol is taken, the picture is a very long time coming, thus proving that it has a retarding action.

The intensifying of the negative is undertaken with six to twenty-four drops of pyrogallie acid, eight cubic cents. of alcoholic ammonia, without any addition of bromide. I have employed this alcoholic developer in a very large number of spectrum plates recently taken, and have

\* Photographische Mittheilungen.



secured results which would have been quite impossible to obtain with aqueous development.

I ought here to remark that certain bodies dissolved in alcohol greatly increased the retarding effects of the latter. To this class belong all aniline colouring matters, which, under certain conditions, I put into my dry plates. At first I allowed the alcohol from my moistened dry plates to run back into the stock bottle, and I remarked that as this became more and more deeply tinted by the colouring matter, so the developing action proceeded with more and more tardiness.

It is, therefore, well to moisten one's plates invariably with pure alcohol. As a particular advantage of alcoholic development I may mention that the film clings very tightly to the glass surface, even when no albumen or india-rubber stratum has been made use of; whilst in the case of an aqueous developer the film has a great tendency to slip off in the washing and fixing process.

The difference in the action of an aqueous and alcoholic developer may be explained simply by reason that the presence of alcohol renders the reducing action of the pyrogallie acid more difficult. It is well known that aqueous pyrogallie solution speedily becomes brown, the latter being oxidized by the oxygen in the atmosphere, while alcoholic pyrogallie solution may be kept for years without browning or oxidizing. This retarding action remains even in the presence of ammonia, being the more apparent the more alcohol there is present. It is, therefore, in one's power to regulate the rapidity of the development by the addition of more or less alcohol.

That the addition of a large quantity of alcohol renders the employment of a bromine salt unnecessary is due to yet another reason. The bromide of silver film always contains a small quantity of free nitrate of silver, which raises its sensitiveness in no little degree. The aqueous ammoniacal developer has a tendency to dissolve the nitrate, and when this happens, a fogging of the plate ensues, for pyrogallie acid with ammonia brings about a general reduction of the very easily reducible nitrate of silver in solution. The addition of bromide of silver hinders this, by converting the nitrate of silver at once into bromide of silver, which is less easily reduced. Alcohol may be substituted for bromine salt, as it dissolves nitrate of silver with difficulty, and thus prevents rapid reduction, in accordance with the saying, *corpora non agunt nisi fluida*. For this reason the addition of bromine to the developer is less necessary in a strong than in a weak alcoholic solution. Aniline colours act in the same way, but have a stronger retarding action than alcohol.

## PREPARATION OF ABSOLUTE ALCOHOL.

BY J. LAWRENCE SMITH.\*

This substance, as obtained in commerce, very seldom marks more than 98 to 99 per cent. It is, however, not unfrequently made in our laboratories, and when this is done the usual method is employed of pouring strong alcohol on lime until the lumps of lime are covered. This method of proceeding gives a thick magma which, when heated over a water-bath, allows the alcohol to pass over but slowly, and much of the alcohol is lost from the impossibility of the heat penetrating the thick mass. The method I follow differs from this in no way except in the quantity of lime employed; using the smallest quantity of lime necessary to abstract all the water, it is surprising how completely the lime will perform its function in this respect. Take, for instance, one litre of alcohol of 94 per cent.; this contains about 60 grammes of water; if to this be added 120 grammes of good and fresh-burnt lime, requiring about 40 grammes of water to convert it into hydrate, actual experiment proves that when kept in con-

tact with the alcohol a sufficient length of time it accomplishes this absorption of water, and the alcohol decanted from the precipitated lime will be fully 98 per cent.

Operating upon this fact, I have been long in the habit of supplying myself with alcohol of 98 and 100 per cent., by proceeding in the following manner:—I have in my laboratory three or four 2-litre bottles, into each of which I place  $1\frac{1}{2}$  litres of 94 per cent. alcohol, the strongest alcohol sold in commerce; to this is added 180 grms. of fresh-burnt lime, of the best quality, broken up into a coarse powder. These bottles are set aside on the shelf, and agitated from time to time: the oftener this is done the more rapidly will the reaction be accomplished. A week or ten days will usually suffice when the bottles are allowed to remain at rest, and the hydrate of lime will settle in a few days, and by a syphon two-thirds of the original alcohol can be drawn off free from lime, which marks 98 per cent. alcohol, and when filtered and 50 c.c.m. evaporated to dryness there will be left only the merest trace of lime, less than  $\frac{1}{2}$  milligramme. But, of course, redistillation is so simple that if we wish the alcohol at 98° it can be readily distilled over a water-bath. The magma remaining in the bottle, when distilled over a water-bath, furnishes the remainder of the alcohol about one half per cent. higher.

When absolute alcohol is desired, take the alcohol just as it has been syphoned off or distilled from the magma, put it in a convenient flask for distillation, and to each litre add 120 grms. of lime in coarse powder; attach to a Liebig condenser inverted, so that the alcohol will run back into the flask when condensed: this is continued for an hour and a half or two hours. The condenser is then placed in its normal condition, and alcohol distilled over which will mark 100 per cent. Recently I have learned that there is a method adopted of making the absolute alcohol by one distillation, operating by the inverted condenser first; but in this process the amount of lime called for is the usual quantity, whereas I find that by reducing the lime to its minimum, and always having bottles ready to furnish 98 per cent. alcohol, the operation is facilitated, and the loss diminished. So that with the ordinary conveniences and appliances of the laboratory, that are always at hand to be mounted, I can, with fifteen or twenty minutes of *personal attention and manipulation*, obtain a litre or two of absolute alcohol. Of course the time for the reaction of the materials and the distillation is not referred to, as this requires little or no supervision.

## A RAPID DRY-PLATE PROCESS.

BY H. T. NEWTON.\*

SINCE writing on this subject I have continued my experiments, and have some modifications to suggest.

The No. 1 collodion should have one and a-half grains of chloride of calcium instead of one grain. The developer is compounded as follows:—

Water	...	...	...	...	3 ounce
Ammonia	...	...	...	...	$\frac{1}{4}$ "
Bromide of ammonium	...	...	...	...	10 grains

To develop an 8 by 10 plate, put three drops of the above into a wide-mouth vial. After washing the plate thoroughly, flow over it three-quarters of an ounce of a three-grain pyrogallie acid solution. If the exposure has been right, the image will appear immediately. After the detail is well out, pour the pyro solution into the vial containing the alkaline compound, and again flow over the plate. The image will instantly assume strength and brilliancy. It should be finished with acid pyro, or tannin and pyro, in equal parts. The quantity of the alkaline solution to be used will depend upon the exposure. One drop will be sufficient, if the exposure has been one minute with a quarter-inch opening in an eight-inch lens.

\* *Chemical News.*

\* Continued from page 501.



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## THE INFLUENCE OF COMPETITION FOR PRIZES.

As we have reason to believe that the offer of prizes by Mr. Crawshaw for specific excellence in photographs will not be renewed again for the present, a brief glance at the influence of the competition during the past two years may not be without interest. In some degree the whole question of the influence of contests for prizes is involved in the consideration of any special competition; but it is unnecessary here to do more than glance at the general subject. The opponents of medals and prizes allege that the disappointments, the bitterness, the heart-burnings involved, to a large number of competitors, far outweigh the value of the pleasure conferred upon the few successful prize takers. It is simply necessary to point out that the aim of such competitions has no reference whatever to the amount of gratification to which they shall give rise. Their object, besides the generous general aim to aid a favourite art, is, we take it, twofold: first, to stimulate a number of artists to make special efforts to produce the very best work of which they are capable of a given kind; and, second, to ascertain the highest possibilities and secure the highest results, in a special branch of work, which can be produced under pressure of a strong, direct incentive to effort. Palms and gladness to the victorious necessarily follow: disappointment, mortification, irritation—the emotions varying in different mental constitutions—inevitably fall to the lot of the greater number who are behind in the race. Disappointment at failure is natural and right. No man sends in his contributions without hoping to win, and believing that he may do so. If he be indifferent about failure, he is scarcely worthy of success; the true conditions of emulation have not been aroused in him. Disappointment at failure is one of the essential conditions which in a competition should secure good results, because, in noble natures, that disappointment is the truest incentive to additional effort. The misfortune to be deprecated is when disappointment leads to bitterness or anger: the cases are happily rare, and the feelings, when evoked, fortunately much more transient than the real good effected.

In the Crawshaw Competition incentive was offered to the production of a class of work of a very unusual—we might almost say of an unknown—kind. So far as we know, life-size heads, produced direct in the camera, had never been attempted, certainly never exhibited, before. Mr. Crawshaw had himself made some effort in that direction with sufficient success to make him wish to see what

more could be done when a number of men made special effort; hence, for heads of this kind, he has during two successive years offered prizes of fifty and five and twenty pounds; and for heads of half life-size, prizes of half the amount; whilst, to admit of comparison, a prize for enlargements has each year been added. The results have been singularly interesting and instructive, whatever may be the conclusions drawn from them, which will necessarily vary with the tastes and mental stand-point of the observer. It is certain that many of the direct pictures have had more beauties and fewer defects than many photographers would have been, *a priori*, prepared to expect. That some distortion should arise from bringing the camera, with its huge Cyclopean eye, within a few feet of the sitter, was inevitable; but the distortion and the rugosity of texture have been much less obtrusively apparent than might have been anticipated. In choosing between direct life-size and enlargements to the same proportions, it is probable that where delicacy and refinement are regarded as paramount qualities, the enlargements would receive the preference; whilst for vigour, massiveness, and bold relief, many would prefer the direct pictures. The examples of the latter probably in no instance had quite so much of the ameliorating labour of the artistic pencil in softening asperities as the majority of the enlargements had received, and this modifying treatment, it appears to us, is imperatively necessary in all life size photography. As we have before insisted, the literal imitation in full proportions of life, of every line, every freckle, every variety or defect of texture, petrified into perpetual rigidity, without colour, without anything of the generalization of the many phases of thought and feeling which pass over every face in a few minutes, and which the true artist blends into one harmonious life-like aspect—is at times absolutely painful. There is every detail of life's form, but no life; often strikingly illustrating Byron's lines:—

"So coldly sweet, so deadly fair,  
We start, for life is wanting there."

The skilful artist softens, blends, subdues, the rigid details, and gives the photograph the quality of a pictorial presentment of life, rather than a stark imitation of life. And this, in our estimation, is one of the important lessons of the competition. And whilst it has been shown that portraiture, even in life-size, under skilful and judicious treatment, may be satisfactorily produced in the camera, it has been shown that in half-life size, of which comparatively little has been done before, the results are exceedingly charming, for in this size, with scarcely a single exception, the examples sent in to both competitions were in every way admirable.

Besides giving the photographers an interest in, and familiarity with, portraits of more important size, and showing them and the public to what extent photography could successfully attempt such work, there have been many collateral advantages gained. Every photographer who has entered the competition has gained something in the effort. Increased knowledge of and mastery over technical conditions, under circumstances of an unusual kind; increased art knowledge and experience: light and shade are the chief elements of pictorial art of which the photographer can effectively avail himself, and the management of these elements in large heads makes more serious call upon the photographer's artistic skill than is done by small pictures. Hence freedom of style, largeness of idea, escape from the pettiness of conception, which perpetual concentration upon small work is apt to produce, are amongst the general advantages secured. These and other gains, which we need not pursue further, have unquestionably been amongst the collateral advantages of the competition. And the least of these is of more importance, and will be more enduring in its character, than the memory of any of the few minor disappointments or jealousies which have arisen, and will leave in the mind of photographers and that of the munificent donor of the



prizes only the memory of the beneficial results to which the competition gave rise; whilst the name of Mr. Crawshaw will always be associated with his noble and disinterested aid in giving an important impulse to this branch of the art.

### TRADE ALLUSIONS IN PHOTOGRAPHIC MEETINGS.

A QUESTION of some interest to photographers, which has before been discussed, has again arisen out of the proceedings of the last meeting of the Photographic Society. A correspondent, who had been present at the meeting, complained in our pages a fortnight ago of the tendency, in the papers and in the discussions, to trade allusion, and the distinct mention and recommendation of the wares of different manufacturers. The adoption of any precise, inflexible, and unvarying course in such matters is fraught with many difficulties. The primary aim of all the proceedings at Society meetings is to give useful or interesting information to the members; and many members are interested in knowing the especial lens, collodion, or other appliance with which a given result was produced. To say that such information absolutely should not be given, because it involved the mention of a special manufacturer's name, would be manifestly to attempt a degree of repression in every way offensive and undesirable. To permit, on the other hand, the constant introduction of announcements, recommendations, or "puffs" of the wares of special makers, by a side wind, into papers or discussions, might become a serious injustice to other manufacturers, who, more modest, or less fortunate in having eloquent friends, or less shrewd in securing such advocacy, would, with equal claims, receive no such aids to publicity in the Society meetings. The admirable institution of a technical exhibition at the South London Society was nearly swamped in its youth by the tendency manifested last year to use it for trade purposes. To avoid all the risks attendant on such a course, it is the custom of many scientific societies to prohibit trade allusions altogether. In the Photographic Society of London it has been the custom, without absolutely forbidding such allusions in discussion, to check the tendency as far as possible; and this has been best effected by the elimination of allusions of an advertising character, from any papers in which they might occur, previous to their being read to the meeting. Unfortunately this had not been done on Tuesday evening, the transition state of the Society, and the change of officers involved, affording, we presume, the explanation. As this unsettled state of things will, we trust, speedily pass away, we may fairly hope that the evils dependant upon it will pass with it, and that this particular evil will not occur again. The tendency to indulge in trade talk at the last meeting has been the subject of condemnation in various quarters, as our correspondence columns bear witness. We note, also, that in a contemporary it is the subject of condemnation; but, oddly enough, the strictures are confined to the remarks of one gentleman, who is described as sneering at the tools of a successful rival, and pulling the lenses of an eminent manufacturer. As this gentleman did not initiate the mention of the works of special manufacturers, but hearing of the long exposures required by the lens of a French maker, whose name, amongst those of other manufacturers, had been mentioned, he, having much experience in the special class of work, gave the information that by the use of another lens a very much shorter exposure would suffice, it is hard to see in what especial sense his allusion could be regarded as "putting," if those which had preceded it were innocent. Of the sneering alluded to we neither saw nor heard anything. Mr. Mayland, in an earnest and indignant letter in another column, points out that Mr. Chaffin was in no way blameworthy for mentioning his lens maker, collodion maker,

and paper maker, as he was inexperienced in the practice of the Society; but that some one manifestly was blameworthy. It is quite certain if the subject had not been introduced, Mr. Robinson would not have initiated the trade allusions which his good-natured desire to give information led him to follow; and he will probably be as much surprised, and possibly more amused, than any one else who was present at the meeting, to learn that his kindly remarks are reported as sneering at a rival's tools.

### FRENCH CORRESPONDENCE.

So as not to extend too much the subjects treated of in my last letter to you, I will merely quote the formulæ by means of which M. Geymet prepares, sensitizes, and develops the plates which, under the three monochrome clichés of M. Ducos du Hauron, yield at once coloured images. The collodion used is composed of—

Alcohol	...	...	100 cubic cents.
Ether	...	...	100 "
Pyroxiline...	...	...	3 grammes
Bromide of cadmium	...	...	3 "

The silver bath is prepared of—

Distilled water	...	...	1000 cubic cents.
Crystallized nitrate of silver	...	...	180 grammes
Nitric acid...	...	...	a few drops.

After sensitizing his plates, M. Geymet covers them with a preservative composed of—

Water	...	...	500 cubic cents.
Beer	...	...	500 "
Tannin	...	...	30 grammes
Acetic acid	...	...	50 "

After the solution has been made, the white of an egg is added, the mixture shaken violently, and filtered.

The developer is made up of—

Water	...	...	1000 cubic cents.
Pyrogallie acid	...	...	10 grammes
Acetic acid	...	...	5 cubic cents.

Before being applied, a few drops of a ten per cent. nitrate of silver solution are added. The fixing is conducted by means of a six per cent. cyanide of potassium solution.

The plates, which are obviously employed dry, should remain at least three minutes in the silver bath; when they are withdrawn, they should have a matt-white appearance, and look like an iodide film.

The cyanide, which will be seen to be very strong, attacks the image, and almost renders it invisible, but it soon reappears, and if the development is continued in the sunshine the maximum intensity of colour is obtained. M. Geymet employs very acid baths, because he finds he obtains, in this way, his colours more intense.

I mentioned, in my previous letters, the nature of the process which M. Ducos du Hauron employs, but I do not think it will be uninteresting to my readers to cite the theory which he has recently given me in a note just received from him.

A body that appears white to our eyes is one which sends back all the luminous rays falling upon its surface; a body that appears black is one which absorbs all the luminous rays and reflects none; and, finally, a body that appears to us coloured in such and such a manner is one which absorbs certain rays and reflects others.

Now it is well known that white light is composed of rays of different kinds, which may be reduced to three colours called primitive; to wit, red, blue, and yellow. A tint, whatever it may be, is always formed from one of these colours, or two or three combined in proportions which vary *ad infinitum*.

To copy a coloured painting, therefore, it suffices to reproduce by itself all the red (or compounds of red) of the picture, to do the same with the blue and with the



yellow, and, these three productions obtained, to blend them again in one sole image, so as to reconstitute the painting with all its combination of tints. Such is the principle upon which M. Ducos du Hauron's process rests.

In order to separate the three primitive colours in the model, he begins by making a first cliché, which furnishes him with all the red in the painting. To do this he interposes, as we know, between the object and the sensitive plate a plate of green glass. This colour having the property of absorbing all the red rays, there only pass through the screen rays of other colours, viz., the blue and yellow ones, or compounds of these two colours. By this first operation, therefore, we have obtained a cliché where the red and its compounds are all represented by transparencies, and the other colours by opaque portions in the film; and if a positive print is taken of this cliché (by the ordinary carbon process) upon red pigmented paper, a first image will be secured representing all that is red in the object to be reproduced.

Let us suppose now that a second cliché is made by substituting for the green glass an orange one. The exposure behind the orange glass is not so long as one might imagine; thanks to M. Ducos's improvements, only eight or ten minutes are necessary. A screen of this colour having the property of absorbing all the blue rays, this second cliché will furnish a positive which, produced by means of blue pigmented paper, will give all the blue of the model. And, finally, a third cliché obtained by employing a screen of violet glass (which absorbs all the yellow rays) will give a positive which, if produced upon yellow pigmented paper, will contain all the yellow or compounds of yellow in the original painting.

When the three prints have been thus obtained, it only remains to blend them together; that is to say, the impressions are produced upon provisional supports, and are then transferred to the same sheet of paper, care being taken to make them tally very accurately; the three monochromes thus superposed furnish a reproduction of the painting with all the tints of the original.

It is easy to understand that objects which in the original are black will be represented in each cliché by transparencies, and being marked upon the three positives, and with equal intensity, they appear black on superposition of the three colours, which annul each other reciprocally. The whites, on the contrary, being represented on each cliché by opaque portions, are not marked upon the positives, and are represented by the white paper serving as the ultimate support of the image.

The absorption of the red rays by the green glass, the blue by the orange glass, and the yellow by the violet glass, takes place in accordance with the law of complementary colours, and the results obtained by M. Ducos du Hauron confirm practically the scientific theories hitherto put forward on the subject.

M. Carette has presented to the French Photographic Society, on behalf of Dr. Van Monckhoven, some samples of sulphate of iron obtained by exposing a mixture of this salt, water, and acetic acid, for some days to a temperature of 100° Cent. in a closed vessel.

If this is added to a solution of ordinary sulphate of iron, such as photographers prepare, in the proportion of a tenth of the volume of this concentrated solution, it will be observed that the new developer possesses the following advantages:—1. It allows one to diminish the duration of exposure to one-half. 2. The image developed is much more intense. 3. The bath, instead of losing all its properties after a few days, gains, on the contrary, with age.

At the same time Dr. Van Monckhoven has remarked that the results vary according to the condition of the collodion, and especially that of the bath, and he promised to report further in the matter after some more experiments. Our friend calls attention to the circumstance now, as it is especially in dull weather that the new developer will be found most advantageous.

M. Franck de Villecholle exhibited to the members of the Society several enlargements obtained by the light of a sulphide of carbon or binoxide of nitrogen lamp. To regulate the flame, MM. Delachanal et Mermet have constructed an apparatus of the following nature, which M. de Villecholle has made use of:—

The binoxide of nitrogen produced by the economical process of M. Deville is saturated by sulphide of carbon vapour in a flask with double tubes full of small fragments of some porous body impregnated with sulphide of carbon. Into one of the tubes passes a current of gas, which descends to the bottom; into the other tube is fixed an iron pipe of very contracted diameter, made so as to prevent the flame returning towards the flask. The gas comes either by the first tube or by the second, and burns with the most brilliant blue flame. The jet has a large opening, and, whatever its shape, it must be provided with a stopcock to govern the flame, as well as to prevent it, at the end of the experiment, from approaching too near the orifices or tubes. The products of combustion—nitrogen, sulphurous acid, and carbonic acid—are dangerous to breathe; but they may be carried off by suitable pipes. The flame produced by MM. Delachanal et Mermet's lamp gives a blue flame extremely photogenic, and although it is not more than twenty-five centimetres in height, with a diameter of four or five centimetres, it is so soft as not to hurt the eyes.

The productions enlarged by the aid of this light are evidently superior to those obtained by other processes of amplification; but one cannot forget that, notwithstanding the improvements mentioned by our friend Franck, the illumination in question involves some dangers which photographers cannot but regard as serious drawbacks.

Toucheing this point, M. Pélégot, a member of the Institute, reminded the members of an accident which happened to Baron Liebig. The German *savant* employed, at a demonstration at which the Crown Prince of Prussia was present, a mixture of sulphide of carbon and binoxide of nitrogen. Despite all his skill and scientific knowledge, the illustrious professor could not prevent an explosion, the effects of which wounded the Prince. It is wise, therefore, to abstain from meddling with such dangerous compounds.

ERNEST LACAN.

#### LIEBERT ON PHOTO-ENAMELS.

FROM the negative to be printed a clear diapositive is obtained in the camera by means of a good collodion and properly acidulated silver bath, the plate being developed with

Distilled water	...	...	...	1 litre
Pyrogallie acid	...	...	...	6 grammes
Citric acid	...	...	...	4 "
Glacial acetic acid	...	...	...	30 cub. cents.

The image comes out slowly and with much delicacy; it must appear perfectly vigorous in the shadows and quite transparent in the high lights. It is fixed with cyanide of potassium, and thoroughly washed.

The margins of the collodion film are cut through, and the plate put into a litre of water containing six cubic centimetres of sulphuric acid; in a few minutes the image becomes detached, and floats upon the surface of the water. The collodion image is lifted by means of a glass plate and put into another dish, when it is washed with water half a dozen times.

For toning, two different solutions are required:

A.—Rainwater	...	...	...	100 grammes
Chloride of mercury	...	...	...	7 "
B.—Rainwater	...	...	...	400 grammes
Chloride of gold	...	...	...	3 "

Ten parts of A and of B are added to one hundred parts of rain or distilled water. The picture is put into this bath, and the grey tint soon changes to a deep black.



When it has become quite vigorous viewed as a transparency, it is well washed and put into a bath of

Rainwater	...	...	...	200 grammes
Ammonia	...	...	...	30 drops

In this the chloride of silver is dissolved, for if burnt in, it would impart a disagreeable tone to the picture. Finally, the image is again washed before it is laid upon the enamel plate.

During its sojourn in the furnace the image retains its black colour; if a sepia brown tint is desired instead, it is laid in a second bath prepared as follows:—

C.—Rainwater	...	...	...	250 grammes
Chloride of iron	...	...	...	2 "
D.—Rainwater	...	...	...	250 grammes
Red ferricyanide of potassium	...	...	...	2 "

These are mixed together in a flat dish, as under:—

Rainwater	...	...	...	300 grammes
Solution C	...	...	...	2 "
Solution D	...	...	...	2 "

$\frac{1}{2}$  per cent. solution of chloride of gold 2 to 3 drops

The picture is moved about gently in the dish so that it tones uniformly, and after two or three minutes it is thoroughly washed.

The laying of the picture upon the enamel is done in the following manner. The glass plate bearing the image is put into a dish filled with water, and the plate remains at the bottom, while the picture swims on the surface. The enamel plate is now slipped under the film, so that it is in its proper place, and then the glass plate at the bottom is lifted up and the whole taken out of the water. The picture is then carefully pressed against the enamel plate, so that any air-bubbles that are present are removed. The glass plate is held in a slanting position, to allow the water to drop off, and then the whole is dried over a spirit flame. After the margins of the collodion film have been cut away round the plate, the enamel is taken off the plate of glass.

The portions of tinted collodion film still adhering to the glass may be made use of afterwards in retouching. It is removed as soon as dry from the glass plate, and rubbed upon a palette with a few drops of lavender oil. As this retouching colour consists of the same elements as the picture, it possesses precisely the same tone.

The burning of the enamel takes place in a muffle furnace which is heated to a white heat by means of coke and small coal. The enamel plate is placed flat upon a round plate of clay, and it is brought in this way into the furnace. The collodion becomes brown, and then the plate is pushed further in, so that there should not be too sudden a change in the temperature at first. By degrees the high lights of the film become clear, and then the image is withdrawn slowly, allowed to remain for a short time at the entrance of the furnace, and then removed to get cold.

The picture is now burnt in, but possesses a matt surface; it still requires a ceramic glaze. This latter is prepared by mixing one part of easily fusible enamel powder (flux) with twenty parts of alcohol; the mixture is shaken up, and, after standing for some seconds, the upper portion is decanted off and mixed further with fifty parts of normal collodion. This is poured upon the picture, and the latter is drained against a bit of blotting paper, so that no thick edge of dry collodion is found at the margin. The picture, when the collodion is perfectly dry, is again put into the furnace, heated to a cherry redness in order to melt the flux. If the heat is not sufficient, the operation must be repeated.

*Process for large enamels.*—According to Duchemin, large photo-enamels are best produced upon glass plates which have been coated with fusible arsenic enamel. A plate of this kind is covered with a filtered solution of

Water	...	...	...	100 grammes
Gum...	...	...	...	3 "
Honey	...	...	...	1 gramme
Bichromate of potash	...	...	...	3 grammes

The film after drying is exposed under a diapositive, and then a powder of the following nature is applied with a dry brush:—

Oxide of cobalt	...	...	...	10 grammes
Black oxide of iron	...	...	...	90 "
Minium	...	...	...	100 "
Quartz sand...	...	...	...	30 "

The picture, when developed, is fixed by dipping in a bath consisting of one part muriatic acid in twenty parts of water, and then washed and dried.

The glass plate is put upon a cast iron plate covered with chalk, so that it may remain perfectly flat during its sojourn in the furnace. In a covered and well heated muffle the picture is burnt in within a minute; it should be cooled gradually.

## SOME REMARKS ABOUT PHOTOGRAPHING INTERIORS, AND ABOUT PORCELAIN BATHS.

BY RANALD DOUGLAS.\*

A FEW weeks ago I was called upon to make some views of interiors whose light was so dim that my plates were covered with stains from long standing. I was about to give the job up hopelessly, when presently a bright idea occurred to me. I asked if they had any glycerine in the house. A small bottle of it was procured, and a few drops were put into my collodion and silver. The subsequent plates were free from stains, although left in the camera for from thirty to forty minutes. Curiously enough, the high lights, such as windows, bright objects reflected from mirrors, were distinctly visible on the plates just as they came out of the plateholder. The developer brought out the rest without fogging, save a slight veiling on the windows. This phenomena I never saw explained. Can any one explain it?

Mr. Carey Lea, in his excellent work on photography, says about porcelain baths: "If there is the slightest flaw in the glazing inside, the solution will penetrate it and gradually saturate the whole of the porous biscuit which makes the body of the vessel, between the inside and outside glazing. This not only involves a great loss of expensive silver solution, but after a time the outside glazing also probably cracks, and some day the operator finds his bath empty."

Last year I carelessly broke my rubber view-bath, and used a porcelain one in its stead, having before heard that silver would penetrate porcelain, but I thought my bath an exception. I trusted it with my solution over night, and even left it in for weeks. I suffered no inconvenience from it for about nine months, but lately, when taking a view, I noticed some diminution of solution. I suspected nothing, so re-filled it, and work went on. An hour after work was done, I returned to it and found it empty. This justifies what Lea says in his manual. Let those who use porcelain silver baths be careful to select perfect ones, or dispense with them entirely.

## Correspondence.

### KENNETT'S GELATINE PELLICLE.

SIR,—Surely Mr. Aldridge's letter, complaining that Mr. Kennett is out of pocket, is a little out of place. What are the facts? There is no "discovery" in the making of a gelatine emulsion, and Mr. Kennett *patents*, for his own use and benefit, the idea that for the convenience of a manufacturer desiring to supply customers, the gelatine shall be dried, as more convenient for carriage.

No photographer, amateur or professional, benefits by



this. Mr. Kennett has speculated in a patent, and must surely abide the results of his speculation.

He is indebted to other workers for the emulsion itself, and in my opinion should have considered this before attempting to take a patent. That the patent itself is not sound is no argument, one way or the other.—Yours, &c.

A WORKER.

### TRADE ALLUSIONS IN PHOTOGRAPHIC SOCIETIES.

"An Eagle towering in his pride of place,  
Was by a mousing Owl hawked at."

SIR,—Will you allow me very emphatically to endorse the protest of "N. L." in your issue of the 13th instant, against the practice of making papers read before the Photographic Society vehicles for trade advertisement? The practice is bad in itself, and brings a train of other mischiefs in its wake, amongst which "envy, hatred, malice, and all uncharitableness" are prominent, and these in their turn prompt the utterances of the "false witness." In the admirably brief, simple, and practical paper of Mr. Chaffin, there are no less than three such trade allusions: we are told from whom he obtains his paper, his collodion, and his lens. Mr. Chaffin was not to blame for this, but the officer of the Society to whose care his paper was committed previous to reading it was. It has hitherto been the wholesome custom to remove such allusions from papers previous to their being read to the members; and a rule of the Society makes it imperative that papers should be sent in a week in advance of the meeting, for the purpose of supervision and revision. I am the more forcibly struck with the evil of this trade puffing from what has followed, and which I also crave permission to protest against. At the meeting in question, after Mr. Chaffin had mentioned the lens he used, and stated that the exposure varied from seventy to one hundred and twenty seconds, Mr. H. P. Robinson suggested to him that by the use of another class of lens he might reduce his exposure to from twenty to thirty seconds. Coming from an authority of such experience and success in that, as well as other branches of the art, the information was interesting, and if the introduction of makers' names were admissible at all, most legitimate. I see in a contemporary journal a comment on the circumstance, which will pass for just what it is worth. But whilst we may pass the comment as unworthy of notice, I wish to enter my protest against the falsification of fact contained in the statement that Mr. Robinson sneered at the tools of a successful rival.

The statement is utterly without foundation. I was sitting at Mr. Robinson's side, and emphatically declare that there was nothing approximating to a sneer; but a quiet unobtrusive statement of a fact. The writer in question appears to be familiar with sneering, and affords a good example in his reference to Mr. Robinson as "a third place candidate for a prize," and this familiarity possibly made him impute his own practices to another. The sneerer is generally also familiar with the *suppressio veri* and *suggestio falsi*, and in this allusion there is an example of both. Instead of being simply a "third place candidate for a prize," Mr. Robinson took four prizes, the first prize in three classes, and the second in another. I have ventured to make this protest in the interests of the Society, as I know that nothing will so much tend to suppress discussion as the knowledge that the speaker is liable to false and malicious comments and misrepresentations in the journals.—I am, sir, yours, &c.

WILLIAM MAYLAND.

SIR,—Will you allow me to say that I feel much obliged to Mr. Fry for his assurance that a "genuine revival has begun" in the Photographic Society? The sole aim of my letter in a recent number was to secure a "revival" of the good old custom of "sinking the shop" when taking part in Society proceedings. I have always understood that a

rule or custom prevailed of removing everything like trade advertisements from papers before they were read, whilst I certainly have not heard so much *shop* at a meeting of the Society for many years as I heard at the last; and I should be sorry indeed if its tone and manner were to become the keynote for others to come. Some of the new members who had come up from the country to attend the first meeting of the session expressed their disappointment and disapprobation emphatically at its close whilst in the room, and remarked that they would not travel many miles in a hurry to hear nothing but shop and triviality.

I must decline to discuss the qualities or conduct of the chairman, as I never denied his geniality, and should not, in any case, begrudge him the approval of Mr. Fry.—Yours truly,

N. L.

### DISPENSING WITH WATER IN OUT-DOOR WORK

SIR,—Will you kindly allow me space in the NEWS to state that the method of dispensing with water in out-door photography by means of the acetic acid and water preservative which Mr. Viles, in his paper read before the Photographic Society of Great Britain, has attributed to me, is the process that Mr. B. J. Edwards gave to the photographic public when he described his Graphogene before the South London Society.

Your insertion of this will confer a favour upon—Yours respectfully,

W. T. WILKINSON.

14, South Street, Bromley, Kent, Nov. 23rd.

### Proceedings of Societies.

#### LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE annual meeting of this Society was held at the Free Library, William Brown Street, on Tuesday evening last, the 24th inst., the Rev. J. D. RILEY, Vice-President, in the chair.

The minutes of the previous meeting were read and confirmed, and Mr. B. Boothroyd and Mr. W. M. Pendlebury were elected members of the Association.

The SECRETARY then read his

#### Annual Report.

In presenting the eleventh annual report of the proceedings of this Association, I am pleased to say that there is no falling-off in its prosperity. Seven new members have joined, and only two resigned.

The attendance of the members is generally good; but I think it would be advisable to meet a little earlier in the evening, for many members who live out of Liverpool leave business a due time before the usual hour at which our meeting commences, and, rather than wait in town, proceed home, and then feel disinclined to return to town again for our meetings.

In looking over the work of the past session, I find that few papers have been read, members frequently stating that they had nothing new to communicate; yet the meetings have been plentifully provided with objects interesting to photographers, and, with but little trouble to the exhibitors, instructive papers might have been written on their methods of production.

A paper on the "Emulsion without Washing Process" has been communicated by Mr. Phipps, and by this process both Mr. Phipps and Mr. Houlgrave have experimented and produced most excellent results, which have been exhibited at the meetings.

The gelatino-bromide process has been described and illustrated by Mr. Palmer and Mr. Atkins, the President, at our first meeting, practically illustrating the development of the plates.

Various articles of apparatus connected with photography have been shown by Mr. Ellerbeck, Mr. Keith, Mr. W. Harding Warner, and others.

Mr. Atkins gave an exhibition of transparencies by the aid of the sicopticon.

Prints and negatives by various processes have also been plentifully exhibited, so that the meetings have always proved interesting.

The Society's album has received several contributions from Mr. Green, Mr. Warner, and others.

The usual presentation plate is this year again wisely printed in carbon, with an addition of four smaller prints by the Woodbury process, so that members may possess a reliable example of the progress of permanent photography.



It has not yet been found practicable to illustrate the actual working details of a process at the evening meetings, owing to the difficulty of procuring suitable conveniences.

The Edinburgh Photographic Society have what are called "popular evenings" occasionally, at which there is a lantern exhibition of photographs, with a descriptive lecture. It would, no doubt, be advantageous to this Association if one or two exhibitions of this character were given to the members and their friends during the winter season.

Only one outdoor excursion has taken place this season, which was to Rhydywyn; but many of the members usually take advantage of the facilities afforded by the excursions of the Naturalists' Field Club, and manage to secure excellent pictures.

The TREASURER then read his report, showing a balance of £25 8s. 5d. to the credit of the Association.

The Rev. T. B. BANNER said the reports of the Secretary and Treasurer were exceedingly satisfactory, and they were passed.

Mr. W. H. WILSON thought it was advisable, as the Secretary had suggested in his report, to meet earlier in the evening. He proposed, therefore, that the meetings should commence at six o'clock.

The motion was agreed to.

The VICE-PRESIDENT proposed that there should be a lantern exhibition for the members and their friends.

The Secretary was requested to make arrangements for such exhibition about the middle of January next.

The following officers for 1875 were then elected:—*President*—Rev. J. D. Riley. *Vice-Presidents*—Mr. W. Atkins and the Rev. H. J. Palmer. *Treasurer*—Mr. A. Tyrer. *Hon. Secretary*—Mr. W. Murray.

Mr. E. Roberts, Mr. E. P. Houghton, and Mr. W. H. Kirkby were then elected members of the Council in the place of those retiring by rotation.

The third number of the Belgian *Bulletin* was handed round. It was illustrated with a charming portrait, printed in carbon, by Mr. J. Maes, of Antwerp.

The Rev. H. J. PALMER exhibited the plan he adopted in preparing and coating his gelatine emulsion plates. He had made a raid on the nursery, and captured one of Clark's pyramid food warmers; this he found admirably adapted for the purpose of keeping warm and pouring on the emulsion, as by using it several disadvantages in using a bottle were avoided. He (the Rev. H. J. Palmer) also described the cupboard in which he kept his plates, which, however, were a long time in drying.

Mr. O. R. GREEN said that that would be owing to the cupboard being air-tight; and the plates being wet when put in, the air in it would keep damp. If, however, a few pieces of lime were placed in it, and covered with calico or blotting-paper to prevent dust, he had no doubt the lime would absorb the moisture, and the plates would dry much quicker.

The SECRETARY exhibited some specimens of the plumbago or "dusting-on" process, done by Mr. W. B. Bolton and himself, and advised the members to try it themselves.

Mr. ATKINS showed some developing dishes for gelatine plates made by cementing strips of glass on another piece somewhat larger than the plate to be developed. By using these dishes he was enabled to cover the whole of the gelatine plate, otherwise he had great difficulty in making the developer flow all over.

The Rev. H. J. PALMER said that by putting a few grains of plain gelatine into the emulsion he found no difficulty in making the developer flow even to the edges of the plate.

Mr. ELLERBECK used the plain gelatine before applying the developer with good effect.

Mr. WILSON proposed, and Mr. ATKINS seconded, a vote of thanks to the Library and Museum Committee for the use of the room for the meetings. The vote was carried by acclamation.

The meeting was shortly afterwards adjourned.

#### WEST RIDING OF YORKSHIRE PHOTOGRAPHIC SOCIETY.

THE next meeting for the 30th inst. (Monday) will take place at Leuchter's Rooms, opposite the Mechanics' Institute, Bradford, at 7:30 p.m.

The report of our last meeting, unfortunately, was not inserted in the PHOTOGRAPHIC NEWS issued on the 20th inst. I obtained half-a-dozen proof reports of our meeting, and distributed them to the Yorkshire local newspapers. In my great anxiety to give publicity to our first and very successful inaugural meeting, the mistake arose owing to the proof for your journal being enclosed to me, and sent by mistake to a local paper, whilst I expected it

would have been forwarded to you direct. However, the readers of your journal will be in time to attend our next meeting as above stated; and as our committee is formed with the intention of adding three additional names that will represent the photographic interest of any towns that may be pleased to ally themselves with Leeds, Bradford, and Halifax, intending members please will take this as a personal invitation to attend on Monday next.

To the two or three gentlemen in Leeds who have expressed a little surprise that they were not invited personally, it will perhaps be necessary to explain that the Society, having no "body" to move in the matter, was comparatively powerless to wait upon gentlemen as etiquette would require, and therefore dependence was placed upon photographic gravity alone for drawing its members together.

I may add that the West Riding Society has now a body, and, if not a soul, a very earnest spirit; and as to the former, it is increased, to my hearing, this last week by a dozen new members at least. The "good wishes" letters that reach me are very encouraging; but the one dated from Mr. Cumberland contains a very practical suggestion—"Put me down as a member"—a formula I now give to future correspondents.—I am, yours, &c.,

J. W. GOUGH, Hon. Sec. pro tem.

#### Talk in the Studio.

**NITRATES IN THE PRINTING BATH.**—Alluding to a recent reference in our pages, by our Paris Correspondent, to the use of nitrate of potash in the printing bath, *Anthony's Bulletin* says:—"We would suggest that the nitrate of potash could profitably be replaced by the nitrate of alumina, which could be used, in consequence of its great astringent quality, in much less proportion than the nitrate of potash. Any one desirous of trying the nitrate of alumina can very easily prepare it by dissolving chalk in nitric acid to saturation, filtering, and then adding to it a saturated solution of alum until the precipitate of sulphate of lime ceases. The remaining liquid is a solution of nitrate of alumina and nitrate of potash. A weak solution of this salt can also be employed to prevent the blistering of the albumen after removal from the hypo. After the prints are toned, and before putting them in the hypo, allow them to lie some time in a weak solution of nitrate of alumina. This will have the effect of so hardening the albumen as to prevent the solvent action of the hypo upon it. Too strong a solution of nitrate of alumina will cause the albumen to crack."

**GLYCERINE PRESERVATIVE.**—Mr. B. S. Cooper, writing in the same journal, says:—"It frequently happens during the hot summer months that we have to go out to take monuments, and sick or debilitated people, but find in such places no means of developing. Such has been my experience this summer, which led me to make some experiments in order to keep the collodion moist. I tried several means and ways to no purpose, until I tried the following: pure glycerine, 1 ounce; condensed water, 1-2 ounce; shake well, and after the plate is coated, drain and wash with clean soft water until the greasy lines are nearly all gone; then pour over it the glycerine on and off, till all the lines are gone. Let it drain for a time, and place it in the shield. It will keep moist for three or four hours, with the thermometer at 104°; the time required is from fifteen to thirty seconds, according to light and stop used in the lens. I develop with iron, rather weak at first, 12 grains to the ounce; I use glacial acetic acid, 2 ounces to 24, until it penetrates the film; then I add silver, 5 grains to the ounce, pour it over the plate, when to my delight the picture comes out boldly and clearly. In order to get up intensity, add more iron and silver, after which treat it as usual with negatives. Any mode of developing generally practised will do, with the addition of silver; but, without it, there is only a faint outline of a picture. I have never seen this recommended in any of the journals, but hope it will be fully tested by more skilled hands."

**DRYING AND FUMING SENSITIVE PAPER.**—A correspondent of the *Philadelphia Photographer* says:—"A good drying and fuming box may be made as follows:—Take a common dry-goods box about three feet long and twelve by twenty inches deep and wide (size not particular); make a door of the top, and paper inside and outside; set on end in a dry room. When the paper is silvered it should be hung up to drip, silver side



out, and, to prevent curling, fasten two corners together by means of pieces of cardboard one and one-fourth inch long by half an inch wide, and cut one-third their length like a pen. Put this split card on the two corners, which will hold them in position; attach, also, a small piece of filtering or tissue paper to the lower corner, to carry off the drop. Across the top of the drying box stretch two wires, equi-distant from the front, back, and each other; on these wires spring clothes pins should be placed so as to move easily wherever wanted. Eight inches from the bottom a piece of wire-cloth should be stretched the full size of the box. When the paper has ceased dripping, place two pieces back to back, fasten two or three corners, according to the size, with the cardboard already described, and suspend by the clothes-pins on the wires. If large, suspend by two pins; if small, one is enough. Heat is produced by an alcohol lamp under the wire-cloth, which diffuses the heat uniformly. Dry in ten minutes. When dry, remove the lamp, and in its place put the ammonia for fuming. When fumed, opening and shutting the door violently will expel the excess of ammonia, and the paper may remain in the box until wanted. Paper rapidly dried in the dark gives more brilliant prints, and is more sensitive. Paper kept long in a very dry room has the peculiar property of not printing until some hours after silvering; the same paper hung in a damp room over night, and silvered as usual, will print all right. Paper prints most brilliant when just dry enough not to stick to the negative. If very dry, it prints harsh, and will not take a pleasant tone. Too dry paper gives prints lacking detail in the shadows and softness in the high lights—dead-looking prints."

## To Correspondents.

**THE YEAR-BOOK OF PHOTOGRAPHY FOR 1875.**—We have pleasure in acknowledging the receipt of copy for our forthcoming annual from many of our friends, and we take occasion to appeal to all our readers whose experience and observation may have suggested interesting points of practice, to favour us with brief statements of such matters, to enable us to make our forthcoming YEAR-BOOK as complete and interesting as possible.

**G. MACKIE.**—As a rule, we have found that the defect you describe, of the prints which appeared sufficiently deep in tone whilst in the gold bath, becoming brown on fixing, is due really to insufficient toning, the eye being deceived by the apparent depth; and the remedy in such case is simple: it is only necessary to carry the toning further, and allow the prints to become apparently too black in the toning solution. In this case they will lose something in the fixing bath, but will possess sufficient depth when finally dried. Sometimes it is due to rapid toning, giving a rapid superficial effect of richness, which is lost in the hypo. In this case, using the bath somewhat weaker is the remedy. Very frequently it is due to the use of a weak, flat negative, which does not permit sufficient depth in printing without overdoing the lights. A good brilliant negative is an essential requisite to the production of rich purple tones. In some cases you will find that the first effect of redness caused by immersing the prints in the hypo disappears on allowing them to remain in the fixing bath a little longer. The maker of the paper you mention recommends a tungstate of soda and gold bath, using twenty grains of the tungstate, one grain of chloride of gold, and six or eight ounces of hot water, using the bath as soon as it is cold. Have you tried this?

**JAMES MAYCOCK.**—The "Kineoscope" was a pretty little photographic toy invented in France by Mons. Lauglois, and patented both in France and this country. It practically afforded an interesting illustration of the persistence of vision. It consisted in a little locked containing two minute photographic transparencies placed opposite Stanhope lenses. The pictures presented the same object in two different positions, representing two phases of one action. On looking through the small aperture of vision the figure is seen in one position, but on depressing a small button this figure disappears, and another appears in its place, in another position, with such rapidity that the figure seems to be changing its position. An example we have seen, presented, in the first picture, a gentleman and lady apparently conversing; a touch of the button represented them kissing, and a rapid motion of the button gave the effect of a rapid succession of kisses being exchanged! Of course an endless series of effects of motion could be produced with suitable pictures. The name was not derived from the inventor; its derivation, so far as we remember, was from the Greek, and referred to the illustration of motion which the optical toy afforded.

**B. C.**—As a rule, it is a well understood practice amongst respectable professional photographers not to exhibit portraits in a show-case against the expressed wish of the customer. We do not know of any especial method by which you can absolutely compel the photographer, who is imprudent enough to persist in exhibiting a portrait after your decided prohibition, to remove it. It is probable that a lawyer could help you to a remedy; but we cannot indicate the precise proceeding. In the only case of the kind which we remember to have seen, the sitter whose portrait was exhibited against his will broke the show-case and removed it, a plan which we can scarcely recommend.

**H. NORGATE.**—We regret that we cannot give you the information. We do not at present remember any one who gives lessons in colouring photographs.

**F. STEPHENSON.**—We see no reason to suppose that the lens is much in fault; but it covers only a small field, and must be used for small pictures. There is a little tendency to under-exposure in the pictures, and they are not well lighted. The view of the Waterloo Hotel is pretty good; but the other building is under-exposed, and stained, either from a dirty plate or imperfect manipulation. The child's portrait has apparently been taken in the open air, which does not permit of the same effective lighting which can be secured in a studio. You should remember, also, that in taking either buildings or landscapes a suitable time of day and condition of light should be selected, in which well marked light and shade can be secured, as an even, diffused, dull light gives tame, flat pictures.

**W. H. B.**—The address of Mr. Viles is Pendryl Hall, Codshall Wood, Wolverhampton.

**ONE IN THE DARK.**—There is no work solely devoted to the chemistry of photography; but you will find much valuable information in Captain Abney's *Instruction Book*, which is cheap; or in Anderson's "Skylight and Dark Room," at a higher price.

**H. S. (Brighton).**—Streaks in the direction of the dip arise from various causes; but you will find that they very frequently arise on first replenishing an old bath with new solution, and will in this case very often disappear after a few plates have been worked in the bath. A very common cause, often overlooked, is the presence of floating scum on the surface of the solution. When the solution is left in the bath it is a wise course to take a strip of clean blotting-paper and remove all traces of such scum every morning. When the streaks arise from something not easily traced in the constitution of the bath, it is a good thing to keep the plate in motion laterally all the time it is in the bath. At this season of the year it is not uncommon for streaks to arise from immersing the plate before the collodion film is sufficiently set. Sometimes diluting the collodion with a little plain undiluted collodion will remove them. The brownish stains on some negatives are apparently caused by an imperfection in the albumen coating, some floating filament having probably been present in the albumen solution, which would, by the way, be better made weaker. The image being poor, and the deposit sandy, suggests an over-worked bath.

**ENQUIRER.**—The tear-drops on your negatives are probably caused by splashes of the nitrate solution from haste in pushing down the slide of the camera-back.

**JARLEY.**—As a beginner in photography, reading the *News* will doubtless, as you anticipate, aid you much, and we shall at all times have pleasure in giving you information and advice. There are various modes of preparing plates so that they will keep for a few hours; but if you wish to keep them more than a few hours it will be wiser and easier to try a dry process. One of the simplest plans of preparing a plate to keep a few hours is to proceed in the ordinary mode of coating and sensitizing the plate in the silver bath, and then wash it in two or three changes of water, the first being distilled water. Then pour over it a mixture of equal parts of glycerine and water, and place it away to drain in the dish. Such a plate may be used, perhaps, twelve hours afterwards with safety. Expose two or three times as long as with a wet plate in its ordinary condition. Before developing, wash away the glycerine coating, and cover the plate well with a little of the bath solution, then develop as usual. Most preservative processes are often uncertain, and always messy and troublesome; spots and stains often arising from various causes. A simple dry process is more certain. The coffee process, or the beer and albumen process, or the Fothergill process, would be easily mastered. You will find these all in our last YEAR-BOOK, which you will find of great service to you.

**J. TAYLOR.**—A half-plate lens may be used in its complete form with the lantern. A  $\frac{1}{2}$ -inch condenser will do well. Mr. York's address is 87, Lancaster Road, Notting Hill.

**A CONSTANT READER.**—We do not remember the dates with certainty, and have no files for reference. That in the *Times* appeared on the Saturday previous to its appearance in the *News*. The *Standard* was earlier, being within a few days of the opening of the exhibition.

Several Correspondents in our next.



## The Photographic News, December 4, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

#### THE PLEASURES OF A STEREO-STAND AND GLASS SLIDES.

"I SHALL not go abroad next summer, but spend twenty pounds on one of these revolving stereo-stands and a lot of glass slides." And our friend, sitting comfortably in an arm-chair, with his elbows resting on the table, continued to gaze with deep interest at the views as he turned the handle of the instrument. "There's the *Mer de Glace* at Chamounix. Why, I can almost see that part of the glacier I crossed. And that's Geneva, with the bridge where you look down and see the rapid Rhone hurrying along at your feet. Ah! there's the old lion at Lucerne carved out of the solid rock, in memory of the Swiss Guards killed at Paris. I know this; it is Genoa. By Jove! I remember walking along that very quay past the big church at the corner. And this is the Hall of Mirrors at Versailles; it is like looking through a hole in the wall right into the place," &c. &c. And thus our friend proceeds to recognise, one by one, the pictures of places more or less familiar, the brilliant transparencies showing every detail as clearly as they are to be seen in the original. "But why are the little pictures so expensive, and why are they to be purchased only in Paris, and from one firm alone?" Well may our friend ask the question. The work of this kind done by our own artists—by Bedford, England, Gordon, Good, and many others—is quite equal to that of the Paris photographers, and it is only the matter of printing transparent positives which appears to be the difficulty. And this is certainly no insurmountable one, for there is not one, but three or four good and practical methods now-a-days of producing such transparencies. The true reason why we leave the matter undisputed in the hands of the French is to be found, we think, in the want of a venturesome publisher. A large amount of capital would be necessary in producing an extensive collection of pictures, but we cannot help thinking that there would be little of the speculative about such a venture. People may get as tired as they like poring over paper pictures with a stereoscope placed at an awkward angle on the table, but a glass slide is quite another matter. Not only is it always seen to best advantage in the same position—viz., against the light—but, from the fact that a photograph never shows to such advantage as a transparency, the picture is always better worth looking at. Paper stereograms may be of any quality, but the Paris glass slides are all of them of a superior kind. They are too good to become common, and they are far more satisfactory to the traveller who knows the spots they tell of. The stands, holding some fifty or sixty slides, are, at the present moment, rather expensive articles of drawing-room furniture, for none of the glass pictures, we believe, sell for less than five francs each. At the same time there are many people who eagerly give this price, as there are who purchase Breeze's well-known pictures for three or four times the amount. But transparent slides of English scenery do not exist, at any rate in any number, and the purchase of them is almost an impossibility. In no other form is a photograph so interesting as in this, and if you are a traveller you are never tired of looking at pretty places you have visited. How often do we delight in a certain happy thought, passing away instantly, that reminds us of this or that portion of our travels! The feeling comes over us momentarily, and nothing can recal it. In the views in the stereo-stand, however, we have something that will call up such pleasurable feelings at any moment, and we can gratify ourselves as long as we like. Last year we happened to be staying in a village in the most southern, or rather south-east, portion of Switzerland, and of an afternoon, for a stroll, we would take a walk into Italy and back again. Much the same sort of thing can be done at home by the fortu-

nate possessors of good collections of glass slides. They can walk into Italy for a couple of hours any afternoon they wish, without even leaving the warm fireside; and the bright transparent views they look at are not pictures of scenes they have seen, but the scenes themselves. The views do not remind you of beautiful places, so much as place you bodily on the spot, for everything is real and tangible. If the views were only a little larger, there would be nothing left to wish for, and Mr. Cook, the excursion agent, might find his travellers sensibly diminished, for there are all the pleasures of sight-seeing without any of the *desagrèments* of travelling. There is no miserable Channel passage to be undertaken, no passports to be produced, no extortionate bills to be paid. Here is the quay on the lake of Lucerne called up all at once with a turn of the handle, with a steamboat blowing off a white jet of smoke, ready to start for a trip; and as we peer into the magic peep-show, we can fancy ourselves one of the passengers hurrying on board, bound for a morning's excursion upon the bright blue waters that wash round the shores of the four forest cantons of Switzerland.

### ON THE PHOTOGRAPHIC TRANSPARENCY OF VARIOUS BODIES, AND ON THE PHOTOGRAPHIC EFFECTS OF METALLIC AND OTHER SPECTRA OBTAINED BY MEANS OF THE ELECTRIC SPARK.

BY W. A. MILLER, M.D., LL.D.\*

#### b. *Spectra of Alloys.*

57. The principal object of these experiments was to determine the influence which small amounts of foreign metals exercise upon the photographic image. When equal weights of the two metals are employed (tin and lead, for example, or cadmium and lead), a compound spectrum exhibiting the lines due to both metals is produced; and it is not always the more volatile metal that predominates. An alloy containing 62 parts of copper and 38 of zinc gave a spectrum in which the lines due to copper predominated considerably. In an alloy of about 2 parts zinc to 1 of cadmium the zinc-spectrum was the most strongly marked.

In another experiment, an alloy of 990 parts of fine gold and 10 of fine silver was prepared; on taking the spectrum obtained by an exposure of ten minutes, a distinct but feeble impression of the more refrangible lines due to silver was procured. A contamination of gold with silver to an extent not exceeding 1 per cent. could therefore be recognized by this means; but prolonged exposure was necessary in order to develop the lines due to silver. An analogous result was obtained when the spectrum of plumbago was taken. In this case, in addition to the atmospheric lines, the spectrum of iron was distinctly impressed; the total amount of metallic iron in the plumbago was 3.94 per cent. Graphite deposited in the gas-retorts, which contained 0.23 per cent. of iron, gave very feeble indications of iron. On the other hand, no indication of iron was observable in the spectrum of brass which contained 0.23 per cent. of iron, nor was lead indicated in brass which contained 0.7 per cent. of this metal.

58. All the foregoing spectra were obtained either from the metals in their uncombined form, or else from their alloys. The electric spectra of a few other metals which admit of being submitted to experiment in their isolated form still remain to be added. A considerable proportion of the metallic elements, however, are not included in the foregoing list. These it is almost impossible to examine, except in the form of some of their saline or other compounds. As, however, this portion of the inquiry is attended with some peculiar difficulties, I shall defer what I have to add upon this subdivision of the subject to a future occasion.

\* Continued from page 566.



§ 4.—PHOTOGRAPHIC EFFECTS OF ELECTRIC SPECTRA OF DIFFERENT METALS PRODUCED BY TRANSMITTING THE SPARKS THROUGH GASES OTHER THAN ATMOSPHERIC AIR.

59. In making experiments upon the influence of various gases upon the spectra of the electric spark, the arrangement of the apparatus was modified in the following manner:—The position of the slit, prism, lens, and camera, was the same as in the preceding experiments; but the metallic electrodes were enclosed in a stout glass tube, drilled through the side, which upon this side is ground flat in order that it may be closed air-tight by the thin plate of polished quartz. This plate is kept in its place by means of an elastic band, screwed into brass plugs for holding the electrodes. The ends of the tube are closed by brass plugs which are ground to fit the ends of the tube, and are pierced by small brass tubes for the conveyance of the gas. An elastic band, passing from one end of the glass tube to the other, keeps the brass plugs in their place. The tube is then connected with a gas-holder filled with the gas under experiment (or, when practicable, the gas is disengaged during the experiment), and, after the apparatus has been connected with the induction-coil and adjusted in its proper position, a slow current of the gas at the atmospheric pressure is transmitted, the excess of gas, as it passes out of the apparatus, being conveyed into the chimney or out of the window by a suitable arrangement of tubes.

A simpler apparatus was admissible when the wires could, like those of platinum or of iron, be soldered into glass. A piece of tubing about an inch and a half long and half an inch in internal diameter is united at each extremity to a piece of quill tubing; the wires are then soldered through its sides. A portion of the wire tube is ground away, leaving an opening to which the quartz plate can be applied, and kept in its place by small rings of caoutchouc. The gas was transmitted through the tube as in the other form of apparatus.

60. In one or other of these modes, the following gases were submitted to experiment: hydrogen, carbonic acid, carbonic oxide, olefiant gas, marsh-gas, cyanogen, sulphurous acid, sulphuretted hydrogen, ammonia, protoxide of nitrogen, nitrogen, oxygen, chlorine, and hydrochloric acid.

The general results of these experiments on the invisible rays are in harmony with those already obtained for the visible ones by MM. Angström,\* Alter,† and Plucker.‡ The conclusions at which I have arrived may be thus summed up:

i. Each gas tinges the spark of a characteristic colour; but no judgment can be formed from this colour of the kind of spectrum which the gas will furnish.

ii. In most cases, in addition to the lines peculiar to the metal used as electrodes, new and special lines characteristic of the gas, if elementary, or of its constituents, if compound, are produced. When compound gases are employed, the special lines produced are not due to the compound as a whole, but to its constituents.

iii. The lines due to the gaseous medium are continuous, not interrupted or broken into dots.

61. *Hydrogen*.—The spectrum of the spark taken in this gas is not characterized by any new lines. The most remarkable effect is the disappearance of the atmospheric lines, together with the great lowering of the photographic intensity, whether the metal employed be platinum, gold, silver, copper, iron, or zinc. It is interesting to observe that the characteristic lines of highly oxidizable metals, such as iron and zinc, are visible in hydrogen, though the impression on the plate throughout is very greatly reduced in intensity.

62. *Carbonic Acid and Carbonic Oxide*.—The lines contained in the spectra of these two gases are identical; new lines characteristic of carbon occur in addition to the lines due to the nature of the metallic electrodes. The same

lines are visible when other compounds of carbon—such as olefiant gas, marsh-gas, and cyanogen—are employed. The most characteristic lines in the spectrum of carbon are the following:—At 123 a strong line, a weaker one at 127, two strong compound lines at 133 and 140, and an intense compound line at 153.

With carbonic acid the special spectrum of silver appears much intensified. Some of the lines which appeared as dots in air are continued across the spectrum in carbonic acid. In carbonic oxide the intensity of the spectrum is less than in air; and this contrast between the two gases may be observed, whatever be the nature of the metallic electrodes.

(To be continued.)

## THE PRACTICAL PRINTER IN AMERICA.

### XV.

#### MEDALLION AND ARCH-TOP PRINTING.

THESE are very popular styles for printing from the negative, both on account of their beauty and because by their use the photographic printers are enabled to prevent defects in the negatives from printing. These are advantages which we sometimes have, and for which they are peculiarly adapted. For instance, a negative with a black velvet background is broken along the upper part of it in one place, and in another part of the plate it dried before exposing.

These defects are in such a part of the negative that a proof printed from it *plain* cannot be trimmed unless these defects show so much as to spoil the otherwise fine print. Such a negative, then, cannot be printed plain, and since vignetting it is not a very easy thing to do, on account of the very black background, we can most advantageously print it in either the medallion or the arch-top style.

Besides the above, there are hundreds of cases in which the use of the medallion and arch-top are indispensable.

To some the making and use of the medallion and arch-top are a source of continued trouble and vexation, and the successful photographer is very often hearing complaints from his less skilled brother photographer of his inability to make and use them satisfactorily. The reason of this is because he is careless as to what he uses in making or cutting them out, and not using them rightly after they are made.

The common card oval ferrotype mounts are very often used by some photographers in the making of the medallion and mask.

Some use a knife and cut around on the inside of the mount, but as the soft cardboard is very readily made nicky, and thus gives this nicky appearance to the cut-out, this way of making them is not advisable.

In the place of using a knife and cutting around on the inside of the mount, some place this mount on a piece of sensitive *plain* paper, and print the inside of it quite dark, thus leaving the unexposed part of the paper white.

After cutting a little on the circumference of the dark inside with a sharp knife, the rest of the mask is carefully cut from the medallion with a pair of shears, the point of which is pressed through the aperture made by the knife. The cutting of the medallion and mask in this manner requires a very steady hand to have the result of your labour worth using.

In making the medallion, or arch-top, I have always used brass mats of different sizes. These mats or guides are perfectly even and true, and are made of metal, so as to permit the knife being used around the inside, without any material damage to it, if only ordinary care is exercised in its use. The "cut-outs" are made of different sizes.

The regular size for ordinary card work, when the head is not the so-called "Berlin," should be 2 by 2½ inches oval. A size smaller is used when we do not wish to show as much as in the other; size, 1½ by 2½.

\* Pogg. Ann., 1855, xciv., 141.

† Pogg. Ann., 1859, cvii., 497.

‡ Gillman's Journal, 1855, xli., 213.



A size very much used for small heads is  $1\frac{3}{8}$  by  $1\frac{3}{4}$ .

One of the most convenient of all of the different sizes is  $\frac{7}{8}$  by  $1\frac{1}{4}$ . It is most excellent for the purpose of printing negatives of babies taken sitting in their mothers' lap.

A *carte arch-top*, size about  $1\frac{7}{8}$  by  $2\frac{3}{8}$  inches, is about the only size or style arch-top that is used for the *carte-de-visite*, and for other sizes your taste will dictate.

Common yellow envelope-paper is best to make these medallion and arch-top cut-outs of, as this paper utterly excludes all light that will discolour the sensitive paper. If you prefer to use sensitive paper that is not fit for printing purposes, always use the *plain* and not the albumen paper, because the latter will curl up considerably, so much so as to make it very troublesome to handle.

When you have selected your paper, and have laid it on a glass, then place your brass mats on the paper, and with a sharp knife cut a *quick, clean, and even* cut around the opening on the inside, leaving sufficient paper on all sides of the mats for the purpose of masking the sensitive paper in printing the different sizes, such as the *carte-de-visite*, *Victoria*, *Imperial*, or larger sizes, as the case may be.

In cutting the last part of the medallion or arch-top, considerable care should be given to see that the knife enters in at exactly the place where you first commenced to cut, because often at this part of the cutting there is apt to be a nick in the cut-out if it is not carefully guarded against.

The cutting out of these medallions and arch-tops may probably be very difficult at the first few attempts of the beginner, but if he perseveres he will find that a little practice will soon enable him to do it successfully.

*Every mask or inside will fit its own medallion or outside (i.e., the one that it was cut out of) better than it will any other one, and if the printer will remember this, I do not think he will ever meet with anything but good results.*

When the cut-outs are cut, and *before they are moved*, they should be marked in such a way that the printer can find the mask that was cut out of any particular medallion at will, for this is *absolutely necessary* if he wishes to obtain beautifully shaded lines on his prints.

The way I always do this is to mark on one end of the medallion H, which means the head of it, and directly under it some name by means of which I can easily tell it from the others of the same size. On the *same end* of the mask, and on the *same side* of the paper, we also mark H, and directly under this the name which was written on the outside from which the mask was cut.

To explain more understandingly what I mean, let us suppose that we have finished cutting a medallion and mask, and that they lay before us just as cut.

Now, on the upper part of the outside we will mark H, and directly under it, and also on the outside, "Heathen Chinees." Now, also, on the upper part of the mask we mark H, and under this "Heathen Chinees."

I will remark, here, that it is very essential to have the marks on the *same side* of the paper, and also at the *top* of each. The importance of this will readily be seen further on, when the crescent line is to be shaded on the print.

I spoke above about care being exercised in making cut-outs; that the knife enters in at exactly the place where you first commenced to cut, because often at this part of the cutting there is apt to be a nick in the cut-out if you are not careful to avoid it.

In laying the outside on the negative to print from, *always lay the side marked H up, and close to the negative, leaving the unmarked side of the paper for the sensitive paper to come in contact with.*

In laying them on considerable care and judgment should be exercised, so as to give a proper balance to the position and proportion to the print.

The principal faults that occur in laying these medallions and arch-tops on the negative for printing are:—

1st. The head is apt to be too high up, or too low down, in the medallion or arch-top.

2nd. The body looks as though it was either falling backwards, forwards, or sideways.

The nose or the mouth, as a general thing, should be in the centre of the opening, although this is, of course, open to exceptions.

To avoid the necessity of having to place the medallion on the negative for every print, I stick the corners on the negative by means of a very little of a thin solution of gum-water. I use it thin, so that it will readily come off when you wish it, but will adhere to the negative without any trouble or danger of slipping while the boards are being filled. In case it does not come off, dampen the place a little with your tongue.

In sticking the medallion on to the negative, only stick it by the *extreme tips of the two upper corners*.

Now, a print having been printed in the medallion, which we will suppose to have been the *Heathen Chinees*, we will proceed to shade the crescent line on it.

Take a nice piece of glass of suitable size, care being taken that it has no bad bubbles in it, and lay the *marked* side of the mask on it, after having previously wet the *centre* of it with a little gum. The drying should not be hurried up over a flame unless the paper with the glass is *under pressure* in the printing-frame, because it is not apt to dry *smoothly* unless it is done in that manner.

The air-bubbles between the surface of the paper and that of the glass should be rubbed away with the finger before drying. In laying the gum-water on the paper, do not touch a place larger than the nail of a little finger.

When the gum on the paper is dry, the glass should be cleaned on both sides, and then laid on the print that is to have the line shaded on it; the whole of which is then to be laid on a flat printing-frame.

There is considerable difference of opinion as to which side of the print the line is to be shaded, but the majority of photographers agree that it ought to be on the side of the darkest part of the face, so as to give brilliancy and vigour to the print on account of the contrast.

The size of this line varies according to the intended size of the finished print.

Avoid large lines on *cartes-de-visite* prints.

On large prints, such as 11 by 14, &c., a proportionately large line is wanted, and when done nicely the effect is really beautiful. The size of the line on these prints, 11 by 14, should not be more than one-fifth, or less than one-tenth, of an inch wide at the widest part. For 14 by 18 the size should vary from one-fifth to one-fourth of an inch wide at the widest part. For cabinet cards the size of the line should be about one-twentieth of an inch; and for the small cards the size should be about one-thirty-second of an inch wide.

Having determined as to which side of the print the line should be, the *exact place* on the side is governed by the direction the light falls on the face, and which is only ascertained by the *studying* of the negative or print.

The way I should advise the beginner to shade the crescent line is as follows:—

Lay the inside or mask on the print so that it will cover exactly every part of the printed picture, leaving only the white outside exposed, which, if you were to imagine the medallion or arch-top to be laid exactly on the print as it was in printing it, you will see that the *mask lies exactly in its own medallion or arch-top*, as it did when it was cut, and, consequently, a splendid and true line can be obtained. In laying the mask on the print, always have the end marked H up to the head of the print, since the end marked H of the outside or medallion was placed at the head part of the negative in printing the print.

Always bear the above remark in mind, and considerable annoyance in printing these styles of prints can be saved.

Now, as you have the mask fitted exactly on the print, try in *one* move to place the mask over in the direction you have decided upon having the crescent line appear.



In moving this over there will be a dark line on the other side of the print, which should, in all cases, be *exactly as large as the intended white line. Bear this in mind.*

The reason why you should be careful and have the mask placed over in the right direction in one move is, because you will be more apt to have *both lines alike*, which, if the mask lay in a different direction from what the outside did in the printing, the result will not be so good. *It is for this reason that I have advised the beginner to have his mask fit the print before he moves it to shade the line, and also to move it in one move, as this will give the desired result without fail.*

The required shade in printing the border of the print is ascertained by looking at the background, and then permitting it to darken as *near half-way between white and the tone of the background* as you can judge. Many photographers prefer to have it tinted very slightly.

If the background is *very light*, then print the outside black.

*In shading the print, never let the background and the border be of the same shade, for it will make the print appear flat and feeble.* Failures in this direction are as common in medalion printing as bad and irregular lines, and a printer who does not take care to prevent the one, rarely does the other, for they generally go together.

I do not give the above as anything *entirely new*, but, judging from the very bad, irregularly-shaped medallions and arch-tops that are too often seen, I think it could be adopted by many with profit.

### WHAT I KNOW ABOUT "TEARS."

BY J. R. TANKERSLY.\*

It is well known to most, if not all, photographers of experience that different brands of albumen paper require different degrees of strength for the silver bath in order to produce the best results; but there are a few who perhaps do not, and to them I would say, some brands will dry smooth, and yield beautiful prints, while another brand, silvered on the same bath, will be unfit for use, in some cases drying with innumerable spots or "tears" upon it, and in other cases drying smoothy, but producing prints that have no life or brilliancy. But change the strength of the bath, and the paper which was worthless before will now give the most satisfactory results. In my own experience I have found that there will rarely if ever be "tears" upon the paper unless the silver solution is too strong. I have never known a single instance where "tears" appeared upon the paper, however bad they may have been, that would not be immediately and entirely prevented by reducing the strength of the bath.

When getting a new brand of paper, or one that we are not accustomed to working, I think it highly important to ascertain by experiment what strength of silver solution will produce the best and most satisfactory results in our own hands, and then keep it at that strength.

Some photographers attempt to work all kinds of paper on one kind of bath, and, of course, make sad failures; yet still stick to it because Mr. So-and-so recommends that particular strength. Others—and I fear their name is legion—will prepare a bath, and never test it again while it lasts, which is certainly a very grave mistake, if not gross carelessness. The bath should be tested frequently, and in very warm weather every time it is used, for the reason that evaporation is constantly going on, and in the hot weather of the summer much more rapidly than many suppose, often showing perceptible difference in a single day; and if it should have been up to the maximum strength, one day's evaporation would disarrange it, and cause loss of time and material, and possibly some impatience, for I believe we are not all saints; hence, there is a great necessity for the frequent use of the hydrometer, as guessing will not answer

it you desire accuracy, and that is certainly very essential to one's success in anything pertaining to our profession. I do not think any one can lay down a special rule in photography that will work alike in all hands; but we can give our methods for doing things, which will enable others to test them, after which each one can be his own judge as to what suits him best. I generally get the most satisfactory results from a printing bath of about forty grains in warm weather, and from fifty to sixty in winter, for Hovey's paper; and for the "extra brilliant," thirty-five to forty in summer, and from forty-five to fifty in winter—these being the brands most generally used in our establishment. Float from two to four minutes, according to the intensity of the negatives you are going to print from, always using that silvered the longest time for the thinnest negatives, and *vice versa*. Fume from ten to fifteen minutes. Fume longest for the strongest silvered paper. When making a large print in very hot or damp weather, I prefer to fume only a part of the paper at one time, as it is much more liable to discolour after fuming than before.

### ON FOCUSING.\*

To focus sharply appears at first sight to be so simple and easy an operation that it is scarcely necessary to waste many words over the matter. Nevertheless, so many mistakes happen in conducting the operation (commercial photographs prove this abundantly) that some remarks upon the subject are not altogether out of place.

When it is a question of portraiture, the obtaining of a sharply focussed image is comparatively an easy affair, supposing we have to do with lenses of short focus and of wide angle. The slightest motion of the ground-glass brings about blurring to a considerable degree, and this circumstance helps us greatly in getting the focus. It is, however, somewhat difficult to spread the focus equally over the face and hands, and garments, and background, so that nothing is too much out of focus. As regards the degree of sharpness that an image must possess, views are very different. Some photographers focus very sharply, while others, again, err from throwing their models too much out of focus; and it must be admitted that there are portraits to be seen which, as regards focussing, leave much to be desired, and are yet of a wonderfully artistic nature. In this category may be put some of Adam Salomon's admirable pictures.

Much more difficult is the focussing of landscapes, and more difficult still that of reproductions, where very great accuracy is desirable. Generally, a matt glass plate is employed for focussing, which, if it is to fulfil its object thoroughly, should occupy the same plane exactly as the plate in the dark slide. As a rule, the proper position is determined by the aid of a rule, which is pushed through the opening left by the lens. If, in this case, the distance of the focussing screen and that of a glass plate in the dark slide is, in both cases, identically the same, then there is no difference to be feared. But those who have tried this plan two or three times will soon find that it is very easy to make a mistake of a millimetre, and for this reason the plan cannot be relied upon. The best test is that suggested by Dallmeyer, which consists in putting a piece of matt glass into the dark slide, and inspecting the sharpness of focus in this way. A portrait lens is the best instrument for testing with, while the object should be some coarse printing affixed to a drawing board. It is often the case that one has not a plate of ground glass at one's disposal; in this case a sensitized and washed iodide plate will answer the purpose. If you work quickly, indeed, an ordinary glass plate, upon the inner surface of which you have breathed, will do very well. It is necessary, however, that in focussing in this way a magnifier should be used, of which mention is made further on.

\* *Western Photographic News.*

\* *Photographische Mittheilungen.*



When the point of sharpest focus has been decided on, the dark slide is removed, and the focussing screen put into the camera instead. If the picture is still sharply reflected on the latter, there is no difference in the distance of these two planes from the lens. If there is any difference, however, this can easily be ascertained by pushing the focussing screen backwards and forwards, and then the dark slide can be corrected.

Of as much importance as the operation of focussing is the grain of the ground glass. It is singular that notwithstanding many complaints about the matter, a matt sheet of glass with very fine grain is seldom met with. But a very short time ago we received an excellent camera from one of the most celebrated firms, the focussing screen of which was worth nothing at all. Under such circumstances there is nothing to be done but to produce a fine matt surface oneself, and this is done by rubbing a few drops of olive oil upon the ground glass. At first the latter becomes quite transparent from such treatment, but by rubbing with blotting paper the superfluous oil is removed, and every degree of fineness may be secured. For very fine subjects a certain amount of transparency is very desirable, although it is necessary to be very careful when using the magnifier.

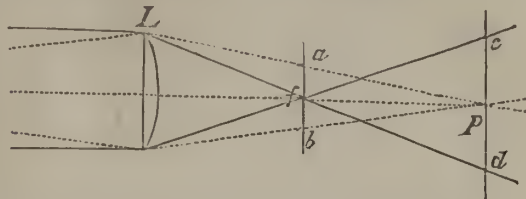
The magnifier is an exceedingly useful aid for focussing sharply; it is very generally used, but seldom in the proper way. Every photographic magnifier may be drawn out and pushed in, and is thus adapted for long- and short-sighted people. This adaptation of the instrument is often forgotten. When working with a coarse glass plate in the ordinary way it does not matter much, but with finer work it is a question of importance. To adjust a magnifier properly, a pencil mark is made upon the rough side of the focussing screen with a finely pointed pencil, and this is looked at from the other side of the glass, pushing in the instrument until the greatest amount of sharpness has been obtained. An experienced operator does not require a pencil mark to aid him, for the grain upon the glass is sufficient guide. When you have secured the image of the sharpest focus, the spot is marked by a stroke upon the tube of the magnifier, and in this position the latter may always be employed in obtaining the greatest sharpness in fine objects.

In very accurate work you may operate without a ground glass; instead of it an ordinary sheet of glass is taken, and on the inner side of it are made several strokes with a diamond. Then the image is so focussed that it falls sharply upon the diamond lines. This is not always practicable without a magnifier, but otherwise the work will be very accurate. The view of such a camera picture with the magnifier and without a matt glass is wonderfully sharp and full of detail. To be quite sure of your work with the magnifier, and to ascertain that the picture really does fall in with the diamond lines, it is necessary to move the head to and fro; if the picture then moves upon the lines, it is not clearly focussed. This plan of focussing is to be recommended for fine reproductions when it is a question of mathematical accuracy. Of course, in such a case, as in any other, only a portion of the picture can be focussed at a time. Dallmeyer recommends the focussing of a point midway between the centre and the margin, while Steinheil recommends focussing the centre itself in the case of reproductions.

It is different with landscapes. The enormous difference in the distance of various objects necessitates in this case very different treatment. Often there is to be found in the landscape only one principal point of interest, whether it is a ruin, a tree, or what not, and then this must of course be sharply focussed; but sometimes it is a picture of combined attractions, with foreground and distance, and then we focus not on an object close at hand, but one at some distance. The reasons for this are easily stated.

In the figure here shown, *L* is the lens, upon which fall

parallel rays from a distance, which are brought to a focus at *f*. If upon this lens there fall also rays from a nearer object, they diverge somewhat like the dotted lines, and their focus is further off at *p*. If the ground glass is moved to the focus *p* for the nearer object, then the further ones are rendered in a blurred manner, and the circle of divergence is at *c d*; while if the focussing screen is put forward to *f*, then the nearer objects are out of focus, and the circle is at *a b*. Upon the size of the latter



depends the degree of blurring or unsharpness, for the smaller it is the sharper is the image. It is easy to see from the figure that *a b* is smaller than *c d*, or, in other words, the blurred character of the nearest objects when focussed at a distance is not so great as the blurred character of distant objects when the camera is focussed for new objects; if, therefore, it is a question of securing a general landscape, and not a photograph of any particular point, then it is much better to focus on a distant object than on a near one. One should not, however, take a very distant object, but one in middle distance.

#### A WORD ABOUT INTENSIFYING.

BY H. L. BINGHAM.\*

I HAVE noticed of late that much is being said on this subject of intensifying the negative, and observe that a great majority are using pyrogallic acid, and some even sulphuret of potassium and bichloride of mercury; also those who expose their plates to diffused light, and various other methods. I do not know that I can impart anything new to my photographic brethren, but this subject and its discussion has impressed me very strongly, inasmuch as I seldom, in my practice, ever strengthen a negative—in fact, often labour to reduce intensity. If required to strengthen a negative, I simply (before or after fixing, usually the former) flow my plate with some of my bath solution somewhat reduced in strength, and then develop again as usual; merely continuing the process of development in its most natural manner. By this treatment of the negative are secured most brilliant effects, and the soft roundness secured is all that can be desired.

I would suggest that every photographer try this method, and keep trying it until satisfactory results are obtained. Very much depends, in securing the best results in the chemical manipulation of our art, upon a thorough knowledge of the formulæ followed; and in this science, as in others, repeated trials are requisite to success. Very many—their name is legion—try a good formula, and reject it because they fail on the first or a few subsequent trials; but the fault is not with the formula—it is with the lack of knowledge in using it. Patience, and a careful observation of all results while testing the various methods, you may employ to compass desired ends; and, with these requisites, a great deal of hard persistent thinking and study will lead you to a higher place in your art, by giving you knowledge wrought out by your own exertions that will produce the finest results attainable, richly rewarding you in honour, and adding more substantial benefits by putting wealth in your purse.



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## IVORY AND OTHER SUBSTANCES FOR PHOTOGRAPHS.

It is not a little remarkable that, remembering the number of substances or surfaces suited for pictorial representation in photography, no material but paper has ever received an extended trial for photographic purposes. In the early days of the art this was not difficult to understand, for a variety of reasons. If ivory were employed for printing on, it was difficult to sensitize, and more difficult to fix and wash perfectly. Surfaces of wood for fancy purposes were equally difficult to deal with, and prepared canvas presented similar troubles. Substitutes for ivory were invented, but they simply made matters worse. Mr. Mayall patented a substitute for ivory for photographic purposes, which, so far as yielding a delicate printing surface was concerned, was excellent, but having a gelatinous or albuminous basis, it was difficult to eliminate the hyposulphite after fixation, and impossible to dry flat, without curling and warping. The modes of transfer which now exist, whether with direct positive, taken on wet collodion process, the collodio chloride prints, or carbon prints, have changed all this, and removed the chief of the difficulties. But still paper remains supreme. For all kinds of ordinary pictures it is natural that this should be so, as no substance can compare with its suitability; but it is a little surprising that for variety sake, and for special purposes, other substances have received so little consideration.

Our attention is called to the subject by reading the specification of a patent taken some time ago, but not completed. The process for which protection was sought was a method of "Preparing Surfaces for Painting, Photographic, and other Printing;" the text is short, and runs as follows:—

"My invention is intended to provide a substitute for ivory, paper, or other materials hitherto in use for painting and printing on, in which great delicacy and evenness of surface are required. And my invention consists in the preparation of metal or other surface impervious, or nearly so, to the mixture hereinafter stated, by the application of the various kinds of wax or its compounds, white or coloured—by preference, pure sun-bleached wax—mixed by means of a carefully applied heat with a white body colour, such as flake white, white lead, zinc white, or similar substances, either pure or tinted. The said mixture is applied to the metal or other surface by heat or by other convenient means."

We fear that any results which could be obtained on the surface in question would scarcely be of sufficient value to repay the cost of even the provisional specification. Wax,

although possessing excellent qualities in its plastic character, is too easily injured to be suitable for a pictorial surface. But there are other substances with more promise, and a brief glance at some of those which have been proposed or tried may be interesting, and may possibly stimulate experimental ingenuity. Mr. Mayall's patent ivory substitute might, for instance, as he himself recently suggested, be found valuable as a basis for transferred prints, although its use was impracticable for pictures produced and fixed upon its surface. The specification of Mr. Mayall's patent contained four methods of forming artificial ivory. In the first method tablets of gelatine were first formed, and these were to be "immersed in a bath of alumina held in solution in sulphuric or acetic acid," the result being a combination between the gelatine and alumina, which gave an opaque white tablet capable of being polished and finished when dry and hard like ivory. In the second method, which seems less promising, a salt of alumina was to be mixed with gelatine, and then the tablets manufactured therefrom. In the third method, equal portions of bone or ivory dust and albumen or gelatine were to be worked into a paste, then rolled into sheets, and dried. In the fourth method, finely powdered baryta and albumen were well worked together, and then rolled into slabs and dried. The last method somewhat resembles Mr. Burgess's method of preparing eburneum; in the latter zinc white, instead of baryta white, being employed, and gelatine instead of albumen. One of the best surfaces we have seen was the invention of Mr. Griswold, of America. He prepared, by a secret process, a collodion which, whilst not differing to the eye from other collodion, gave a perfectly opaque dead white film. This, when applied to a ferrotype plate, gave a pink-white surface, even, smooth, and matt in texture, presenting an admirable ground for a photograph. Mr. Griswold is unfortunately dead, and we believe that his secret died with him.

For many purposes, papier maché, finished with a white enamel surface, is a capital substance for photographs, especially for highly finished miniatures in oil. This substance may be used either for receiving a transferred image produced by any process, or may, with less convenience, be used for printing on direct. Some years ago, whilst we were experimenting with collodio-chloride, we obtained some tablets of this kind which were specially made for us by a house in Birmingham. If a demand existed, we have little doubt that they could be produced at a very moderate price. Collodion transfers have been made to prepared canvas for oil painting, but there is room for further adoption of the idea. We have produced good results by transfer to the prepared silk, with a very fine and perfect surface, effective for plain prints, and admirable for miniatures. White oleoth, of the kind used for table covers, forms also a useful basis for transfer for some purposes. For some ornamental purposes, white wood, of fine texture, is excellent, but has rarely been utilized. There are other similar substances which present an interesting field for experiment.

## LANDSCAPE PHOTOGRAPHY.

In a recent article in the *Photographische Notizen*, Professor Vogel concludes with some excellent advice to travelling landscape photographers, who are apt to overload themselves with all sorts of out-of-the-way articles, that are carried, not because they are necessities, but because, under exceptional circumstances, they might be wanted. He sums up his own experiences as follows:— "Although a liberal store of chemicals, &c., may be useful on a tour, it is a costly matter to go dragging a superfluous quantity of goods about with you. I have specified in my manual the quantities of material that are necessary for a certain number of plates. Thus, for forty plates measuring seven inches by nine, which I took with me to the Carpathian Mountains two or three years ago, I only



had one pound of iodised collodion, and this proved ample for the purpose. For the same surface of glass I had but one pound of protosulphate of iron, half a pound of alcohol, half a pound of acetic acid, a quarter of a pound of ether, an ounce of citric acid, and half a pound of negative varnish.

"It is surprising how very little material is employed if you are a passable manager, and never waste your chemicals. As a matter of course, everything must be very carefully packed, and for travelling I always employ a trunk with partitions specially fitted for the purpose. Every bottle has its proper place, which is padded with felt, so that it is not necessary to pack or line with straw.

"I reduce the number of glass articles to a minimum, and never have any glass funnels, for they break before anything else; I always employ those of gutta-percha, which will keep safe and sound for years. No injurious action upon the silver bath is to be feared, for the operation of filtering takes but a very little while. As a matter of course, I always sensitize in a porcelain dish or cup; not so much silver solution is then required, and the operation is better under one's control and sight. I employ a genuine Japan utensil, not a spurious one that has been made in Europe. My tent I have often described: it is adapted for tours where no vehicle can pass, and is especially noted for its lightness and cheapness. I have the first I constructed still in my possession, after it has been employed for three years. It withstood a severe shaking in my journey among the Carpathian Mountains, and it has been borrowed two or three times, which is a far more severe test than a mountain tour; and yet it is still in a very serviceable condition."

#### THE NATURAL HISTORY OF A NITRATE BATH.

OUR Baltimore contemporary, *The Photographer's Friend*, answering a correspondent who is anxious about the cause and cure of various symptoms manifested by a negative bath in the ordinary vicissitudes of its career in the darkroom, gives the following summary of the constitution and treatment of the bath, for the most part excellent. We should except, however, the recommendation to use ammonia for neutralizing the solution, as the nitrate of ammonia formed, having the power to hold oxide of silver in solution, often tends to produce an alkaline bath.

"A bath properly made contains nitrate of silver dissolved in pure water, iodide of silver dissolved in the nitrate solution, and a slight quantity of nitric acid. The purer the water and silver, the less quantity of acid required. Acid is generally regarded as a restrainer and as an anti-fog agent, but its real use is as a solvent of the foreign matter which may get into the bath. It does not necessarily prevent fog, nor does it cause slowness of working.

"Let us make a bath in the simplest, handiest way. To 33 ozs. of water add 120 grs. of silver, 6 grs. of iodide of potass., and set in the sun for at least forty-eight hours; then add 2½ ozs. of nitrate of silver, stir well, and allow to stand four or five hours more in the sunlight; filter, and you have a pure bath to start with. Test this solution with litmus paper, and add nitric acid drop by drop until the paper turns faintly red. Your bath is now acidified. Next test your bath, to see if it is sufficiently iodized, by allowing a coated plate to rest in it ten minutes; if the collodion appears to be eaten off in lines running the same way the plate was dipped, the bath needs more iodide of silver, which make and add in this way: take 10 grs. of silver and dissolve in 1 oz. of water in a separate glass, dissolve 10 grs. of iodide of potass., and throw these two solutions together in the dark; allow the yellow precipitate formed to settle, pour off the water and fill up the glass with fresh water, settling and pouring off as before; do this three or four times, drain the precipitate as dry as possible, and add to your bath and allow to stand over night, always in the dark; filter when it is ready for use.

"When a plate is dipped in a silver bath the object is to obtain a coating of bromo-iodide of silver, which is formed by the silver in the bath uniting with the bromides and iodides in the collodion. In this operation the bath loses some of its silver, and the collodion part of its alcohol, ether, bromine, and iodine. A certain quantity of these chemicals in a bath is necessary for its perfect working, but after many plates are dipped the bath becomes weak in silver, and saturated with ether, alcohol, and iodine.

"That the bath is weak may be known by the length of time required to coat a plate; that it is saturated with alcohol, by the difficulty in coating it perfectly, the greasy lines refusing to disappear; and excess of iodine is shown by a sand-like deposit over the plate when brought from the bath, which causes, when developed and fixed, small black pinholes.

"To rectify a bath showing either of the above troubles, drop ammonia carefully into it until just neutral—that is, will not turn blue litmus red, or red litmus blue; set this in the sun until it blackens and clears again; put them in your evaporating dish and boil slowly down to about one-half the bulk; now add pure water—that is, such as has been treated as first described, which must always be kept on hand, until the hydrometer indicates the right strength, 45 grs.; filter the solution, make slightly acid again, and it is in good working order. Should you require more solution than this doctored bath will give, do not add silver to it, but add new bath made as first directed.

"When a bath is too acid, neutralize carefully with ammonia, exercising great care not to overdose; when too alkaline, add acid carefully. A bath too acid produces opaque spots like dirt over the negative or ambrotype, spots more intense than the rest. When alkaline, the plate will have a greyish dust or fog over it, which can be rubbed off with the finger.

"Now for a few difficulties frequently blamed upon the bath. Dirty plates producing fog, light leaking into darkroom, camera or holder producing fog, under-time and over-time (both fog producers), old developer with too little acid, dirty fingers, dirty corners to the holders, and dirt everywhere—all first-class foggists. Streaks come from drying the plate too long or not enough, from stopping the plate in bath before it is covered with solution, insufficient coating, too strong developer, and careless flowing of same. Spots come from dirt not filtered out of bath, collodion, or developer, and from dusty, unclean rooms."

#### TRANSIT OF VENUS: PREPARATIONS FOR OBSERVATION.

BY CAPTAIN ABNEY, R.E., F.C.S.

*Thebes, November 11th.*

ACCORDING to promise, I send you a few lines regarding our work up the Nile.

It is evening, and we have only just arrived at our destination, so can hardly say what sort of prospect is before us for photographic operations, though, if it be a climate and country like that through which we have lately passed, it will be simply magnificent. Owing to the kindness of the Khedive, we have been towed up the Nile by a Government steamer; and when I say "we," I mean self and three Sappers, and our boat, or *dahabeah*, as it is called. The voyage has been very slow, and has taken us thirteen days to accomplish, as we went barely three and a-half miles an hour up the stream; and owing to Colonel Campbell (an amateur who is to observe the transit also at Thebes) taking advantage of the steamer to get his boat towed up as well, we have taken longer than we otherwise should have done. On the whole, however, it has been pleasant enough, and we have turned one of the cabins into a dark room. This enabled us to take instantaneous shots at the objects of interest on the banks, which have turned out most successfully. I have been using a small 4½-inch square camera (with square



plates) for the purpose, and with one of Dallmeyer's 6-inch doublet stereo lenses have got pictures which I little hoped to secure. The first hundred and fifty miles was very destitute of interest, the banks were so flat; but since then the scenery has been very beautiful, the hills on each bank sometimes taking most picturesque forms, and with the palms, storks, and natives in the foreground, have made very pretty little bits, which will be interesting as reminiscences. The light is simply perfect for photography, so very actinic. In our spring, exposures of half-a-minute would here be reduced, I think, to about five seconds. Twice on the voyage we have stopped to land and take objects of interest; once at Siout, where we scaled the hills to photograph the old wolf mummy caves and the rock-cut tomb Stabl Antar. We here found that the bath was likely to give trouble through pinholes, and, in fact, that the negatives were never quite free from them. We also found that for most subjects a fifteen-grain iron was sufficient; a thirty-grain was inclined to give flatness. This is a peculiarity I never encountered in India. In fact, there I have frequently used fifty-grain to avoid "chalk." Here the shadows are so transparent, never very deep, and quite bright with detail—very different to all other Eastern countries I have been in. I lay this to the peculiar whiteness of the surroundings, which reflect the light into the deep shades. An interior of a cave which I should have given twenty minutes to in England, I found was enough exposed with but three minutes. It is very hot working, though the north wind which we have keeps a certain amount of freshness in the air. It is very dry, the difference between the wet and dry bulb thermometers sometimes being as much as  $10^{\circ}$ ;  $85^{\circ}$  is what the former registers in the shade. The Nile water itself is only  $73^{\circ}$ . This brings me to talk of the water. In appearance it is a dark chocolate colour, which disappears when allowed to settle, or when filtered through porous earthenware. Trying to make a bath with the water thus freed from sediment was not a success. In the sun it immediately turned brown, and never quite recovered its colour again. Plates sensitized with it were foggy, and none of the usual remedies answered. There seems literally no chloride in it, but a fair quantity of nitrate of soda (the complete analysis I have not yet made). It is very soft, and a lather is made immediately in it. It is capital to drink when you get used to it, but hardly refreshing. For washing off developers, and so on, it is capital, but one always requires a final dose of filtered water to free a plate from the sediment.

A bath thirty grains strong is most satisfactory, mott stains disappearing almost entirely, even with long exposures. On looking over my chemicals the other day, I discovered that, inexplicably, the sulphate of iron was likely to run short, as also the glacial acetic acid. I was at my wits' end. At length it struck me, in passing through a village, and seeing them dyeing, that they must use the former, so I sent out a pattern to the bazaar. In return I got about three pounds of the protosulphate (rather decomposed, but quite usable), and at the very reasonable rate of eightpence a pound. I found my dragoman had got a large stock of white vinegar, and this I have impressed into the service in lieu of the acetic acid; so now I am in great plenitude. I anticipate great days at Karnak and Luxor. I expect to have some hundreds of views by the time I leave; and if fate wills it so, a few will be up at Assouan, near the first cataract, and Philoe.

I don't know what Mr. Bedford thought of the Nile, or if he was hurried through it by circumstances. To my mind, what I have seen of it gives greater photographic promise than any country I have yet seen. I have carefully gone over Frith's and Sebah's photographs, and am confident that not a tenth of important views are published. There seem to be a great many gaps which want filling up in them. I shall try and help in the good

work. Many things are changing, many getting more delapidated and defaced. Hence it behoves the black art gentlemen to look sharp with their cameras, and register aught that may be of interest, and which may have vanished in the next few years.

## A PHOTOGRAPHER'S EXPERIENCES IN THE LIBYAN DESERT.

BY PHILIPP REMELÉ.

[We have already mentioned the fact that M. Remelé, a Berlin photographer of reputation, formed one of the African exploring party sent, with the sanction of the German Government, under the command of the well-known traveller, Gerhard Rohlfs. We are now enabled to place in the hands of our readers M. Remelé's diary, which he has sent home to Dr. Vogel, the President of the Berlin Society for Advancement of Photography, for publication.—ED. P.N.]

LAST summer I was requested by M. Rohlfs to take part in an expedition into Africa, which was to proceed into the interior under orders of the Viceroy of Egypt. My duties were to be those of photographer to the party. The expedition left Europe in November, so I had plenty of time to get an outfit together. As the expedition took place in the winter, and I had read that at that time of the year the temperature was not a very tropical one, I determined to make the same arrangements which I had used for several years past in Germany, without effecting any radical alterations in my plan of operating. My travelling tent and equipment are sufficiently described in my work on landscape photography; it is only necessary for me to mention, therefore, that I provided, in most cases, a duplicate set of apparatus and utensils, to be proof against accidents, &c. Dark slides, baths, dippers, dusting brushes, &c., were all provided for in duplicate. A box with all kinds of handy tools for effecting repairs was not forgotten.

Before the outfit was packed and sent off, everything was thoroughly inspected. I might, had I wished, have purchased new apparatus throughout at the expense of Government; but I preferred to employ my own, which I had worked with for some five years, and which was still in perfectly good order, and well seasoned to the weather. Splitting or warping of the wood was not to be feared, I thought, and the issue of affairs has proved my assumptions to be correct. My whole apparatus consisted of the laboratory box, with necessary utensils, a bundle consisting of tent and stand, three boxes with glass plates, and a small case with reserve articles and chemicals. The bottles were packed in straw, and put into pigeon-holes in this condition, so that any one could be taken out and put back again in a very short time. No breakage occurred in this package, although it was not always very delicately handled. All the chemicals were of the purest and soundest character.

I employed the new folding camera of Meagher. For large pictures, 8 by 6 inch, I used Steinheil's aplanatic 14-inch, as also Busch's 15 by 19; for the stereoscopic plates, Busch's 24-inch lens. The Pantascope was not employed, for it was never required.

I used, as on former occasions, Beyrich's instantaneous collodion, with iodizing solution separate, and was quite content with its work. That now and then difficulties arose was only to be expected, when the nature of my work is taken into consideration. Of these I will make mention further on. I employed the usual solutions; the silver bath was of in one twelve strength, and when necessary a few drops of glacial acetic acid were added. For developing and intensifying I employed the double sulphate of iron and ammonia, on account of its preserving qualities; for fixing, cyanide was used. In favourable weather I varnished the negatives in the sun, otherwise in the tent over a spirit lamp.



When the members of the expedition met together in Alexandria, the whole of the baggage was put in the railway and sent to Minich. From Minich we went by steamer up the Nile as far as Siut. On the journey, which lasted many days, I could do nothing, because I found it impossible to get at my trunks in the mass of packages, but at Siut the unpacking began. Everything was in good order, with the exception of one case in which my portable laboratory was contained, and which I had packed with extra care. It seemed as if the silver solution had run out in several places; and this proved to be the case, one bottle of silver solution and another of iron having become broken. I had plenty to do to put everything straight again, but there was opportunity afforded me, fortunately, for the fitting out of the caravan took up a week.

Round about Siut were some very fine bits of country, and as the weather was favourable, I took the opportunity of taking a few good negatives, there being no difficulties, beyond the dust, to be encountered.

On the 17th December the caravan was ready. That evening we pitched our tents upon a broad sandy plain behind the burying ground at Siut, the usual camping ground of caravans proceeding to Central Africa, and here we passed our first bivouac. The camping arrangements made by M. Rohlf's were exceedingly practical. The tents obtained from Paris were light, and yet very firm and solid, quite competent to resist the effects of a strong wind. In the interior were a camp bed, and table and chair—everything made to pack closely. The tent of M. Rohlf's was larger than the others, and had room enough for all five members of the expedition to sup together.

The next morning, it was a long time before we were ready to start. Irrespective of the many difficulties connected with the Arabian camel drivers, the loading of the camels with boxes and cases of all sorts and sizes, and the inaptitude of our black servants to the job, occasioned great delay. My photographic case was too heavy, and had to be lightened. At last, at about half-past ten, we made a start. Of course on the first day, and for some little time afterwards, matters scarcely went on so smoothly as was desirable. Many of the camels, who were not properly loaded, threw off their burdens, some shied, and now and then one of us Europeans, who were not used to the new mode of conveyance, lost his seat and came tumbling down into the sand. I did not mind the last difficulty, but the throwing down of the cases caused me much anxiety. Only once, however, was a package of mine thrown down in this manner. This one, however, came utterly to grief, and of two hundred plates contained therein, only seventy-nine were recovered whole. The latter—they were of the larger size—lasted exactly until our return to the Nile. It was impossible to photograph during the march of the caravan. As to bringing it to a standstill, that could not be entertained for a moment; and as to keeping my camel back, unpacking the utensils, and setting up tent, &c., and afterwards catching up the rest of the party—such a thing was impracticable. Of an evening after arrival, and in the morning before starting, there was no time for camera work. But for all that, I do not think I missed many points of importance. The desert photographs I collected were taken during excursions made from some oasis. It was precisely in the neighbourhood of these spots, where you descended from the sandy plateau into the green oasis, that the finest landscape views were to be met with, for on the sandy plains there is very little to be found of interest.

Of the desert through which we travelled, bereft of every trace of vegetation, and presenting nothing to the eye but a vast wilderness of sand, I need say nothing, as the scene has often been minutely described.

After travelling for twelve days over these sandy plains, we sighted at last, on the 30th December, at ten o'clock in the morning, Farafrah, the smallest oasis in the Libyan desert, our first goal. The village seemed to be only a

few miles distant, but the clear transparent atmosphere of the desert is very delusive as regards distances, and it was not until four o'clock that we reached the spot. The inhabitants, who had not been advised of our coming, were greatly astonished at our big caravan of ninety camels. They hardly behaved in a friendly manner, and demanded high prices for the food we had to purchase.

My first excursion was to the garden of Farafrah. I must admit that I never dreamed of beholding such luxuriant vegetation. It was very easy to institute a number of interesting excursions. As the caravan remained here only a couple of days, I had to look out for still moments, and my anxiety on this account caused me to wander forth at night time to beat at my destination at a favourable moment at daybreak. Our camp brought together a number of jackals, which, when everything was still, ventured very close to our tents; the least noise, however, frightened them, and I could never get near enough for a shot.

In very still weather the thermometer stood at freezing point at daybreak; but by eight o'clock the sun had so warmed the air that my tent could be thrown open in the garden. The foliage was very thick, and the sun could scarcely penetrate it except at certain points. My first exposure required ten minutes; the others, according to object and illumination, one to five minutes. At first the chemicals worked well, but later I had many difficulties to contend with. Sometimes I had to go a great distance with the plates, and during my journey the temperature would rise considerably; and for this reason, as also because I had frequently to wait for still moments, my plates became covered with dry patches, and sometimes fogged.

As I could not always be near my apparatus, the villagers were given to playing me all sorts of pranks, either out of curiosity or ill-will—I suspect the latter. They would unscrew my camera, or move it away from its position. All these things were naturally very annoying; but, as a rule, when I came to finish my work of a night, I was usually satisfied with it.

(To be continued.)

## Correspondence.

### LIFE-SIZE PORTRAITS.

SIR,—In a leading article in your issue of last week, I find the following sentences:—

"In the Crawshaw Competition, incentive was offered to the production of a class of work of a very unusual—we might almost say of an unknown—kind. So far as we know, life-sized heads produced direct in the camera had never been attempted, certainly never exhibited before."

"Mr. Crawshaw had himself made some effort in that direction with sufficient success to make him wish to see what more could be done when a number of men made special effort."

The following two letters will show you that you have overlooked my work, seeing that the life-sized head therein alluded to was exhibited with two others in the Society's Exhibition in 1870. Though not so fortunate as to have attracted your notice, it was from seeing it at that Exhibition that the editor of the *Art Journal* was moved to ask me for a copy of it, and perhaps you will now modify your statement that "life-sized heads produced direct in the camera had never been attempted, certainly never exhibited before."

Copy of letter from E. M. Ward, Esq., R.A., to Colonel Stuart Wortley.

Kent Villa, Lansdowne Road, Kensington Park, 29th Nov., 1874:

DEAR COLONEL WORTLEY,—I quite sympathize with you in your objection to the statement you mention as having appeared in the *PHOTOGRAPHIC NEWS*, that life-sized photographic heads have



only originated since the last two years; the very circumstance being contradicted by the fact that I have on my walls one of the most beautiful specimens of that kind, of a member of my family, executed by you four years since, and which I value equally for the faithfulness of its resemblance as for its great merits as a work of art, which are, in my estimation, of a high order.—Very truly yours,  
(Signed) E. M. WARD.  
Colonel Stuart Wortley.

*Copy of letter from S. C. Hall, Esq., Editor of the Art Journal, to Colonel Stuart Wortley.*

Avenue Villi, 50, Holland Street, Kensington, W., Dec. 1, 1874.

MY DEAR SIR,—There is hanging in Mrs. Hall's boudoir a most beautiful photograph, life-size, of her god-daughter, which you gave to her in 1870. It is a very perfect example of the art. There has been nothing more perfect produced, to my thinking, since 1870.—Most truly yours,  
(Signed) S. C. HALL.

With respect to the concluding sentence quoted by me from your article, I take the liberty of mentioning the following facts:

The pictures alluded to were taken with a particularly fine lens of Mr. Dallmeyer's make, and they appear to have attracted Mr. Crawshaw's attention, for shortly after the Exhibition Mr. Dallmeyer wrote to me asking for some copies of my pictures for him to send to Mr. Crawshaw at that gentleman's request. These copies were furnished to Mr. Dallmeyer, and I think I am therefore justified in assuming that the exhibition by myself of life-size heads in 1870 was the starting point of the Crawshaw competition; and I trust that the evidence I have laid before you will make you think the same. You will not forget that the Crawshaw competitions were in 1873-74, and that my life-size heads preceded them by three years.—Yours, &c.,  
H. STUART WORTLEY.

[We willingly rectify the statement doing Col. Wortley some injustice, and in reparation insert, at his request, the letters which confirm his claim, although his own statement might have been sufficient. At the moment of our writing we had forgotten the heads in question. The fact that they were not quite life-size, as we find on reference to our notice of the Exhibition of 1870, and that they were rather subject pictures than portraits, to some extent explains their absence from our memory in connection with life-size portraits. They were, however, very noble pictures, taken direct in the camera on 24 by 18 plates, the art qualities and photographic excellence of which we were enabled to speak in the highest terms at the time; and it is not at all improbable, as Col. Wortley suggests, that they had influence in initiating Mr. Crawshaw's interest in such pictures, which culminated in the very important competitions of the last two years.—Ed.]

#### KENNETT'S GELATINE PELLICLE.

SIR,—On the 5th June last there appeared in the *News* a letter from Mr. Aldridge speaking in high praise of Mr. Kennett's pellicle, and in which letter he stated that (at that date) nearly three hundred photographers had been supplied with the preparation. On the 19th of the same month you gave us a very interesting article on the same subject.

Being thus fortified, I wrote to Mr. Kennett for a supply of his pellicle, which I received, and duly tried; and in communicating to you the result of that trial, on the 3rd July, under the signature of "A Dry Plate," I asked if some of the three hundred gentlemen referred to would give us their experiences with this new compound. In reply to my request, "J. R.," on the 10th July, stated that he had encountered similar difficulty to my own; and, on the 17th, "W. J. C. M." to a large extent confirmed my statements; and these are the only gentlemen who have responded to my letter. Mr. Kennett set "W. J. C. M." right on a point or two of detail on the 24th, and I think I

am correct when I say that not one word has appeared in the *News* of any practical value from that date until the 6th instant—a period of four months—when "A Portrait Painter" simply confirms my original statement as regards sensitiveness.

Now, sir, as three hundred persons had had this pellicle issued to them before the 5th June, we may assume that double that number have tried it during the summer months; and it does seem strange that out of so large a number of experimentalists there has not been found one to sing the praises of this pellicle, save and except this same Mr. Aldridge, who introduced it to us six months ago, and who now, on the 20th instant, comes forward and simply recommends Mr. Kennett to charge four times as much for it as he does at present. If Mr. Kennett should be so ill-advised as to put a prohibitive price upon his pellicle, that will be his own affair; but is it not too early to ask the public to pay this exorbitant charge for a preparation the results of trials with which have only been given by less than half a dozen persons, and which results, in nearly every case, have been of an adverse character?

If this gelatine pellicle be really a good thing, Mr. K. will not need to increase, but rather to decrease, the cost of it; because the absence of collodion and silver bath, with all their attendant difficulties, will be so great a boon as to induce, at all events, the large body of amateurs to adopt it in preference to the usual materials used in photography. I therefore ask again for information, both for Mr. Kennett's benefit, as well as for that of the profession and of the amateur.—I am, sir, your obedient servant,

A DRY PLATE.

SIR,—"A Worker's" letter in your issue of 27th instant would perhaps carry more weight if more explicit. He brings a very vague charge against Mr. Kennett's gelatine pellicle, based upon some undefined notion of the idea having been borrowed from other workers in emulsion. This savours more of the antipathy of a rival manufacturer than the disappointment of an impartial experimentalist.

If the idea has been pirated, how does "A Worker" get over the fact of its greater rapidity than that of any other dry process? I have been able to give Mr. Kennett's pellicle but a short trial, and, though met by many difficulties in the shape of coating my plates, I have no hesitation in stating my belief that it is by far the most rapid process in existence. Mr. Kennett's only mistake, in my judgment, is, that he does not sell "dry plates," instead of an emulsion.

The testimony of some of the members of the Liverpool Amateur Photographic Association has already been emphatically declared in favour of this desideratum.—Yours faithfully,  
S. S. YOUNG.

Fairmile, Cobham, Surrey, Nov. 30th.

SIR,—In justice, I am sure you will allow me space to answer a letter signed "A Worker," published in your last issue. His epistle was in answer to one written by Mr. Aldridge.

To the first part of "A Worker's" letter I quite agree in thinking Mr. Aldridge's letter a little out of place. I thank Mr. Aldridge, nevertheless, for doubtless he did it with a kindly motive. The rest of "A Worker's" letter, I beg to say, is a series of misstatements from beginning to end—whether wilfully, or not, I leave to himself and your readers to judge. As he has made such a positive assertion that I am indebted to others for the process—or, as he puts it, for the emulsion—I now ask him to name, for the information of your readers, as well as myself, who those others are, that I may do them ample justice, and acknowledge my indebtedness to them. No one hitherto has accused me of stealing their brains for my own benefit, as he calls it. Perhaps "A Worker" wishes to put in a claim himself! If so, let him come forward boldly, and state his name. No,

\* Mr. Ward misunderstands our statement. We saw life-size heads by Mr. Crawshaw in 1871.—Ed.



that can scarcely be, as "A Worker" would hardly deign to discover anything of so worthless a character; for such, in the eyes of "A Worker," it must be, it being of no benefit to photographers, amateurs or professionals.

It would have been in much better taste had he spoken for himself only, and not taken on himself to pass a verdict for the opinions of thousands. It so happens that I have in my possession numberless letters from all parts of the country, giving his assertions direct contradiction, and in which I am thanked for having placed in their hands, as they say, a process which is a saving of money, labour, time, and health.

I herewith enclose two prints taken by Mr. Willis, of Scarborough, on the 5th instant, and on plates prepared with this "worthless" process. I wish you, as an impartial judge, to pass judgment on them, and say what is your opinion of a process that will produce such work at a first trial.

Perhaps it is the wish of "A Worker" that the pellicle should be as useless as he says it is! R. KENNETT.

[The prints enclosed by Mr. Kennett are exceedingly fine, and in no way distinguishable from good wet plate work, being singularly delicate and full of detail, and perfectly brilliant.—Ed.]

### THE LATE EXHIBITION.

SIR,—Will you kindly give this grievance publicity in the PHOTOGRAPHIC NEWS? I received my five photographs, returned from the Exhibition in London, in a most disgraceful state, they having been put into the case loose one upon another without any attempt at packing. The consequence was that two of the glasses were broken to smash, and the frames injured. I wrote to the Secretary on the subject, but he did not reply to my communication. Such carelessness ought not to be allowed; there should be some responsible person to see that proper care is taken in returning works sent to the Exhibition. REUBEN MITCHELL.

*Willow Bank, Sharples, Bolton, November 30th.*

### IMPROVED TRIPOD STAND.

DEAR SIR,—I cannot remain silent respecting the above. Your correspondent, Sir T. G. A. Parkyns, in your issue of Nov. 13th, says he is disappointed at seeing and hearing of a tripod stand which is so much like his. But I must say that the description is very much like a copy of mine. I do claim improvements, but not the stand itself; neither can Sir T. G. A. Parkyns, for it has been in use for many years, as Mr. Hughes remarked at the South London meeting; but we improved it, and again brought it before our photographic friends, believing it to be a useful and much needed stand.

I can show by my books, and can give the names of parties supplied with the same many months previous to the time that Sir T. Parkyns states; and what I claim as copyright is the drawing only, and I shall take proceedings against anyone copying or making use of the same without my permission.

As to the latter set mentioned, I may say that the one exhibited at the Cambridge Hall, Oxford Street, was a No. 1 stand, and will raise a camera from three to five feet six inches high, and the No. 2 from four feet to seven feet. This, it will be seen, admits of more extension. I contend that the ball and socket joint is far preferable to a block simply turning round in a socket; for instance, by means of a ball and socket, if the object is not just in the square or centre, I can adjust the camera by simply loosening the screw under the ball, and set it as required, and then screw up again; whereas if the block turning in the socket is used, you must stoop and loose the screw in the leg, and in many instances shift two legs and perhaps more, then, in or out, to get the required adjustment. Also the plane is not always required the same for taking panoramic views or moving objects, and if it should be, the ball and socket will answer all requirements.

The bolts in my stands have large heads, and under the fly nut is fitted a large brass washer, so that the wood cannot wear away with constant using.—I am, yours faithfully, W. H. OAKLEY.

202, Grange Road, Bermondsey, London, S.E.

## Proceedings of Societies.

### AMATEUR PHOTOGRAPHIC ASSOCIATION.

A COUNCIL meeting of the above Society was held on the 23rd instant, at 12, York Place, Portman Square, Lord De Ros in the chair. The minutes of the last meeting having been read and confirmed, the following members were elected:—H. B. Southwell, Esq.; H. R. Robertson, Esq.

In conformity with a notice given by Mr. Glaisher at the previous meeting, Lord De Ros was elected Vice-President, and T. Sopwith, Esq., was elected Referee.

The SECRETARY laid before the meeting a revised copy of rules, which were passed by the meeting, and are as follows:—

Rule 1.—A subscription of one guinea per annum shall be paid by each member and subscriber.

Rule 2.—Members shall consist of none but *amateur* photographers.

Rule 3.—Other persons not photographers, wishing to avail themselves of the advantages of the Association, may become "subscribers."

Rule 4.—Each member shall be entitled to select two guineas' worth, and each subscriber one guinea's worth, of photographs every year, free of charge, from the Association prints, subject to such regulations as the referee shall determine.

Rule 5.—Members shall be supplied with all *additional* photographs at half, and subscribers at three-fourths, of the usual prices.

Rule 6.—The Council will at all times hold the Secretary responsible for all negatives entrusted to the Association, but no commercial use being made of the plates, the responsibility is limited to fair wear and tear and inevitable accidents. The Council recommend that all negatives be sent in grooved plate-boxes. Such negatives shall remain during the year for which they are sent, but if special application is made, they will be returned within one month after such application has been received by the Secretary.

Rule 7.—Each member will be expected to forward as many good negatives as he conveniently can, and any member sending less than six during the year may, at the option of the referees, be ranked as a subscriber.

Rule 8.—Copies of every negative in current circulation shall be kept in stock by the Secretary of the Association.

Rule 9.—Prizes to the amount of not less than fifty pounds shall be awarded each year by the Council, to whom is reserved the right to fix the number, arrangement, and relative value of the prizes.

Rule 10.—Any differences which may occur shall be referred to the referees, and their decision shall be final. The prize negative shall become the property of the Association, but in any case the proprietor shall be at liberty to decline to part with his negative, whereupon another shall be selected for the prize.

A. J. MELNISH, Hon. Sec.

## Talk in the Studio.

PHOTOGRAPHIC SOCIETY.—At the meeting of the Photographic Society to be held on Tuesday evening next, Mr. D. L. Mundy will read a paper giving his "Photographic Experiences in New Zealand;" and Mr. W. B. Woodbury will read a paper describing some "Experiments with Coloured Media."

SOUTH LONDON PHOTOGRAPHIC SOCIETY.—The Annual Dinner of this Society will take place at the Café Royal, Regent Street, on Thursday, December 17th, when the members will be pleased to see any photographer or friend who may desire to assist at this social reunion. Further particulars may be obtained from the Hon. Sec., Mr. Edwin Cocking, 57, Queen's Road, Peckham.

THE PHOTOGRAPHER'S FRIEND, an American journal, issued hitherto once in two months, in Baltimore, is about to be merged into our excellent contemporary, the *Philadelphia Photographer*.



**EMBEZZLEMENT.**—"An elderly man named John Fahrbaeh," says the *Daily Telegraph* of the 2nd inst., "was to-day charged at the Dale Street Police Court, before the stipendiary magistrate, with having obtained £265 by false pretences from Julius Hartmann. It was stated for the prosecution that prisoner had represented himself as the manager of the London and Liverpool Photographic Company, and it was alleged that he had obtained the sum named from the prosecutor as a security for a situation as secretary, by false representations respecting the company. The prisoner was committed for trial at the sessions, bail being accepted."

**THE BRITISH ARCHITECT.**—Referring to our recent paragraph alluding to this journal, the operator engaged in producing the photographs writes as follows:—"In your notice of the *British Architect* on the 20th inst. you express a doubt as to the correctness of the notice on the cover stating it to be the only journal in the world containing permanent ink photographs. I beg to inform you that the notice does not refer to the photolithographs of line drawings contained in that number, but to the issue of photographs in half-tone, printed in printer's ink, and of which the enclosed are specimens; the other journals to which you refer being illustrated in line work only, and those in England being Woodburytypes, and not printed in greasy ink. If you will have the kindness to state these facts you will oblige." Some good architectural photographs in half-tone accompany the note, which we are glad to see. We should still point out that the sole claim made is scarcely accurate, as some of our continental contemporaries send out frequent examples of photo-collagraphy, giving fine half-tone, produced, of course, in printer's ink; but whether with as much frequency or regularity as the *British Architect* we cannot say.

**SOLAR PHOTOGRAPHY.**—"A physical observatory," says *Nature*, "is soon to be established in Paris; and a recent vote of the Academy, appointing a commission to report on the subject, will not be lost. It is said that M. Janssen is to be the head of the establishment, in which solar photography will be practised on a large scale. It is also supposed that the observatory is to be ready by the time M. Janssen returns from Yokohama with the instruments."

## To Correspondents.

**THE YEAR-BOOK OF PHOTOGRAPHY FOR 1875.**—We have again to thank many friends for interesting contributions received during the week; and we may again remind our readers that we shall be glad to receive bits of experience and suggestion from all observant workers, as it is by the gathering together of the knowledge of many that our annual has acquired its position as a favourite with all.

**F. C. S.**—If you have not access to any working optician or ordinary brass finisher, probably any London dealer will get the lacquering done for you. Possibly you may do it yourself if you care to try. Take shellac varnish and add either gamboge or dragon's blood, as you prefer a yellow or an orange tint, and add sufficient to give the proper colour. Clean the brass-work well with soap and water, then make warm and apply the varnish. Finally, let the brass-work remain in a warm place for some hours, to permit the varnish to become thoroughly hardened.

**J. J. T. G.**—Your work is exceedingly creditable for a beginner; the only faults they possess being easily remedied. They consist in slightly under-exposing and slightly over-intensifying, the result being a little hardness; that is, there is great contrast of light and shadow, without sufficient detail and modelling. The standing figure is best, but it is just a little chalky in the face. We are glad to learn that you find the *NEWS* so useful. We shall have pleasure in hearing from you from time to time, and shall always be glad to aid you with confirmation or advice.

**J. L. R.**—The matt silver stains like oyster-shells, and at times like slug-tracks, are due chiefly, in your case, to a repellent film, arising from the somewhat horny character of the collodion. It will improve as it gets older, and will yield a less repellent film. In the meantime, you may try the addition of a few drops of glycerine to each ounce, which will probably effect considerable improvement. Great care and cleanliness will also aid you in avoiding the stains. Keep the inner frames of your dark slide well washed, and let the plate rest on strips of clean blotting-paper.

**CAPTAIN TURTON.**—Thanks. There is a curious conservatism about professional photographers, which makes them indisposed to try other than safe and recognized methods. Regarding a society, why not try to establish one?

**AMATEUR.**—By no process of cleaning will you be able to make a beer cask a suitable vessel for holding distilled water for photographic purposes. If the cask were perfectly new it would be unsuitable, as the water would gradually get contaminated with organic matter from its contact with the wood. You must keep distilled water in an earthenware or glass vessel. 2. We cannot speak with certainty of the relative excellence of the paper you name and freshly sensitized paper, not having made comparative experiments; but we think it probable that the permanent paper will give just as good results. It does not require all the silver washing away before toning. We do not know of any better durable sensitive paper than that you name.

**E. J.**—The smallest packet of the sensitive pellicle requires two ounces of water adding—warm water, of course. 2. The time it will keep after mixing will somewhat depend on the weather—probably a week or two in winter. 3. If you find difficulty in getting it to flow over the glass, you may lead it with a clean glass rod. 4. The plates will keep well after they are prepared; but how long we cannot certainly say. 5. You had better follow the printed instructions in developing.

**AN OLD PHOTOGRAPHER.**—The silver will be recoverable by almost any of the processes used for recovering the silver from hypo baths. In this case a simple plan will be to make the solution acid by adding a few drops of sulphuric or hydrochloric acid, and then place a few strips of clean zinc in the solution. This will throw down the silver in a fine black metallic powder. Wash with dilute sulphuric acid to remove traces of zinc, rinse well, and then recover the silver into nitrate by adding nitric acid.

**F. H. WORSLEY-BENISON.**—An intense black tone is best obtained in ordinary albumenized prints by using the line toning bath, made by adding three grains of chloride of lime to two grains of chloride of gold in twelve ounces of hot water. It may be used when it is quite cold, and keeps well. The negatives should be vigorous, permitting a deep deposit of silver in the blacks of the print, giving a slight bronzing. Such prints, with such a toning bath, will yield rich black tones. The especial tones to which you refer, however, in Mr. Bruce's pictures at the Exhibition, are only obtained on collodio-chloride paper, which Mr. Bruce uses for all his work. You will find full details of it and of his mode of working it in his paper read before the Photographic Society in the spring, and printed in our pages at the time. A similarly black tone on other paper, without the delicacy of the collodio-chloride surface, would look somewhat heavy.

**A. C.**—We should prefer No. 2, as doing the work as well and much more rapidly. No. 2 will answer your purpose as well, we think, as the third you name, and certainly will answer best for all round work.

**DRY-PLATE NOVICE.**—Albumen may frequently be used with advantage as a substratum for dry plates, especially where the ordinary acid development is used. For the gum-gallie process, Mr. Gerdon used to employ india-rubber. He found that the india-rubber solution for preliminary coating to gum-gallie plates should not exceed one and a-half grains to the ounce of chloroform, and should not fall below three-quarters of a grain to the ounce. As the solvent is exceedingly volatile it will soon get thick from use, and this must be looked to. If the plates are to be used fresh, they may be employed without a substratum at all, merely applying an edging of india-rubber before developing. In this case all the film becomes loose, except at the edges, forming one huge blister, which, after fixing and washing, may be punctured. The film then subsides and leaves no mark. 2. Alkaline development may be used with collodie-albumen plates, but it requires care to prevent stains.

**SENEX.**—The easier mode of using a flat dish for sensitizing negatives, without risk of stains or lines across the plate, is to employ a dish sufficiently large to permit the plate to be laid flat in the dish, face up, before the solution touches it. To manage this, the dish should be raised up at one end, allowing the solution to flow to the other; the plate is then laid down in the empty portion, and the dish being again brought into a level position, the solution flows over the plate in an even wave. A hook of silver wire is used to lower the plate, and to raise it again when sensitized. There are well-baths and cradle-baths made to facilitate this work; but, with a little skill and care, it is not difficult to do it with an ordinary flat dish. We recently saw M. Lambert, in Paris, working plates 24 by 20 in a simple flat dish, without any assistance. He lifted the large wooden dish out of the level with his knee, holding the large plate with both his hands. This being placed in the empty portion of the dish, the knee was lowered and the solution evenly flowed over the large plate without causing a line or stain of any kind.

**J. SIMPSON.**—No. There is no work on Africa as a field for photographic experiments, nor indeed any special work devoted to photography in tropical climates. Occasional letters and articles on the practice of photography in hot countries have appeared in our pages. We regret that we do not know of any skillful landscape or out-door photographer who undertakes to give lessons.

**J. E. and C. J. EYE.**—Thanks. We shall use the communications in our YEAR-BOOK.

Several Correspondents in our next.



## The Photographic News, December 11, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO. PHOTOGRAPHY AND HOUSE AGENTS—HOW TO PRODUCE PHOTO-RELIEF PLATES.

*Photography and House Agents.*—One of the most useful everyday applications of photography is undoubtedly that of employing it in connection with the letting and selling of house property. A photograph helps us to form a far better idea of a house and its neighbourhood than any other means, short of visiting the place, would do. House agents and auctioneers are well known as an enthusiastic class of men, and prone to exaggeration on the slightest excuse; in fact, we all know that there is scarcely anything so interesting and fascinating as reading the auction advertisements of the *Times*. In many cases it seems as if the auctioneers were quite incapable of describing, within the limits of two inches of type, all the charms and comforts of a mansion, with its dining-rooms and billiard-rooms, its conservatory, terraces, &c., which happens, most fortunately, to be in a most secluded spot, and yet in close proximity to half a dozen railway stations. You are at once possessed with an indescribable longing for the possession of such a charming residence, a desire which is sometimes cured very quickly when a photograph of the fascinating *Chateau d'Espagne* is put before your eyes. It is all very well for the agent to explain that the picture was taken at a most unfavourable season of the year, and that it does not show the improvements that have since been made to the property. There is no mistaking the stucco front, the mean little portico that has been made so much of, the roughly-turfed banks and struggling shrubs that constitute the terrace and plantation. Or if it is some roomy semi-detached villa in a pleasant suburb that is to be disposed of, the photograph shown will at once demonstrate whether it is a residence that may be suitable, or not. You see at once if it is really a substantial edifice in a good cheerful thoroughfare, or whether the eligible house and grounds is one of a cheap lot of rubbishing tenements run up by a bankrupt builder in some forlorn district. And this subject of photographing houses and estates for purpose of advertisement calls to mind the unsatisfactory way in which some of the models are treated. While it is difficult enough to make a dwelling appear more favourable than it is, it is very easy to make it look more uninviting than it is under ordinary circumstances, and, as a rule, photographers who are entrusted with the work do not do as much as they might towards rendering things pleasant and comfortable. If, for instance, there is a foreground of road, footway, or waste land of a rugged nature, it is obviously bad policy to use a wide-angle lens, and thus exaggerate a defect which is already bad enough; or if the villa or tenement is perhaps a little less lofty than it might be, then care should be taken not to make this weakness more obvious than necessary. We have seen pictures of terraces and streets of a most woebegone character, which might have had a much more cheerful aspect imparted to them with the use of a different lens and the addition of a little life in the form of a cart or two, and half a dozen passers-by. A little care taken by the photographers in these matters would aid the agent very materially in getting the property off his hands.

*How to Produce Photo-relief Plates.*—M. Fink, of Vienna, has suggested a plan of producing photo-engraved plates, of the same kind as the Woodburytype blocks, different to that usually adopted. He dissolves half an ounce of bichromate of potassium in seven and a half ounces of water, and this solution is then warmed, and one ounce of gelatine gradually added. When nearly boiling the liquid is filtered through muslin, and the filtered liquid spread over plates so as to form a layer one and a-half lines in thickness; this is, of course, done in the dark room. The dry sensitive film is then printed under a transparent

positive, about ten to thirty seconds sufficing in a diffused light; the impression is taken back into the dark room, and transferred from the printing frame into luke-warm water, where it remains till the image is seen strongly in relief, when it is dried by blotting on filter-paper, and covered with a little glycerine. After this the gelatine mould is covered with a layer of plaster of Paris, and when this matrix is removed, type metal of a fusible nature may be poured in, and a printing block thus secured.

### PHOTOMETRIC VALUE OF THE DIFFERENT LIGHTS USED FOR LANTERN PURPOSES.

BY J. M. TURNBULL.\*

HAVING given a good deal of attention, both last winter and what spare time I have had in the last two months, to the perfecting of the lamp which I intend to introduce to your notice this evening, I was naturally led to also examine and compare with one another the different lights used for lantern illumination, the results of which I wish to embody in the following remarks.

I have used all the different lights, more or less, in my varied lantern experience; but what I have of late been directing my attention to, and what I wish more particularly to speak of just now is, their photometric or lighting value as compared with a standard candle.

I am not at present on the subject of photography, but I cannot help remarking here on the mutual benefits which photography has conferred on the lantern, and the lantern on photography. Previous to the days of photography, the lantern was little better than a toy; then good pictures for it were both scarce and expensive, and in the hands of a few; while at the present time, thanks to photography, infinitely better and more truthful pictures can be got for it, at prices so moderate as to put them in the hands of many who would never otherwise have had them. Photography is also gradually raising the lantern to be a necessary instrument for educational purposes, and will, in the course of a few years, be looked upon as an indispensable instrument for that purpose. It now only requires a good and easily worked light to make it more adapted than ever it has been by those who do not care to take the trouble with lime light. This, as you will see, I have tried to add my mite to. On the other hand, the lantern has done photography good by raising up a distinct and important branch of it, namely, the production of lantern slides. With these remarks I will enter on the subject which more nearly concerns us.

The method of comparing two lights looks, when explained, a very simple matter indeed. Let us take first of all the two lights to be compared, place them at the distance of a few feet from each other; but to measure them we require a photometer of some sort. Let us take one of the simplest forms of it; viz., that of Bunsen's, which consists merely of a piece of bibulous paper of a circular form, and mounted on a wire frame. A piece of filter paper answers the purpose very well. A single drop of oil of any sort is put on the centre of the paper. If this spot is now looked at by transmitted light, it appears transparent, but if looked at by reflected light, it will be darker than the paper. The paper screen is now placed between the two lights at such a distance from each that the spot appears equally illuminated on both sides; the distance from the screen to each light is then measured. Suppose we find that the distance from the screen to one light is two feet, we then square this figure, which gives us four; we then find the distance from the screen to the other light to be, say, four feet; we also square this figure, which gives us sixteen; we then divide the one by the other, which gives four as the result—that is, one light is four times the intensity of the other. This is in accordance with the well-known law that light diminishes according to the square of the distance.

This photometer, though very simple, cannot be relied on for any degree of accuracy, especially if the lights to be

\* Read before the Edinburgh Photographic Society.



compared be of a slightly different colour. This remark applies with greater force to another photometer which is very commonly used, viz., Rumford's, which consists of a piece of wood, either round or flat. The lights are so placed that the two shadows of the wood are thrown on a screen, either white or transparent, and the lights moved till the shadows are supposed to be equal; but if the lights to be compared be anything of a different colour, this method is of very little use.

There are, however, various other forms of photometers which give more accurate results. Amongst these may be classed those of Wheatstone and Ritchie. The photometer which I used in my own experiments was that of Ritchie; it gives considerable accuracy, but is not capable of giving very fine results.

There are two other forms of photometers which are said to give very great accuracy, viz., those of Zollner and Babinet. In both of these polarised light is used. That of Zollner is described and figured in *Poggendorf's Annalen*, vol. c. This form of photometer was used by Dr. Robinson, of Armagh, in estimating the light transmitted by different telescopic object glasses. He says that it can be made to give results thirty-five times more accurate than by the method of moving the lights (see his paper, *Trans. Roy. Soc.*, vol. clix., p. 157). The other form—viz., Babinet's—is also an application of the principle of polarized light, but is more complicated than that of Zollner. It was described by the inventor in a paper read before the British Association in 1864, Liverpool meeting. I have not had an opportunity of seeing either of these two photometers, but as I am not altogether satisfied with the accuracy of the results obtained with Ritchie's form, I intend returning to the subject again.

It is usual, in photometric experiments, to have a standard or unit of light with which to compare the light to be tried. The standard usually used is a sperm-candle, burning at the rate of 120 grains in the hour. This is termed the Standard or Parliamentary candle. Should the candle burn more or less than 120 grains, a correction will require to be made for the same; but with the candles I used, I found that no correction was necessary. My method of comparing the lights was to place the light to be tried in the lantern, and to place the candle on one side of the photometer and the lantern on the other, and having found the proper place when the lights were equal, the lens was screwed out of its place, and the condenser also removed, and the distance measured from the light to the photometer, and also from the candle to the photometer, and the distances squared.

The lens used in these experiments was a card lens of  $2\frac{1}{5}$  inch, 8 aperture, and  $4\frac{1}{2}$  inch focus. I have found that this form of lens is the best I have ever tried for lantern purposes; it can be used with nearly the full aperture; it both gives a great deal more light, and also a much sharper picture, than the lenses in common use for the lantern.

I shall now give a list of the different lights I tried, with their value in standard candles, and then make a few remarks on each of them.

Argand gas lamp ...	=	30	standard candles
Fountain oil lamp, with $1\frac{1}{2}$ circular wick ...	=	39	" "
Hink's duplex, $1\frac{1}{2}$ wicks, not tried in lantern ...	=	13	" "
Sciopticon ...	=	$42\frac{1}{4}$	" "
My own lamp ...	=	58	" "
Lime light ...	...	...	...

The light from the Argand gas lamp varies very much, both owing to the burner used, and also to the illuminating power of the gas. In many towns the light will not nearly be so much as I make it, owing to the low illuminating power of the gas; it is also sometimes deficient from there being little pressure of gas. If that is the case, the wire should be taken out of the india-rubber tubing, which will help to increase

the light. The principal recommendation that this burner has is, that where gas can be had, it gives you very little trouble.

The Fountain or Solar Lamp. If care be taken to keep this lamp clean, and to trim the wick properly, it gives a very good light when the disc is not too large. Sperm oil is the proper thing to burn in it, but good colza or olive oil is nearly as good. The oil does not burn well at first, being cold and thick; it should therefore be made pretty hot previous to being placed in the lamp, or the lamp, with the oil in it, should be set at the side of a fire for some time. To see when the wick is properly trimmed, it should be lighted, and then turned down very low, when a nice even ring of light should appear.

We now come to the paraffine oil lamps. I may here remark that paraffine oil is more suited for the lantern than either gas or sperm oil; it has a sharper and more intense light than either.

Hink's Duplex, with double wicks. I had not an opportunity of trying this lamp in the lantern, but it gives a first-rate light for house illumination, judging from the argand gas lamp, which gave, when burned out of the lantern, a light equal to thirteen candles. I should say the Hink's lamp would be equivalent to about thirty candles when burned in the lantern. Any party having a lamp of this kind in their house can easily adapt it for the lantern by having a tin reservoir made of a suitable size to fit the lantern, and having an extra flange on the top of it, in which to screw the burner of their lamp. The edges of the wicks should be turned to the condenser.

The Sciopticon. This very ingenious lantern and lamp combined gives a better light than any of the lamps I have yet noticed. The fountain lamp, however, comes pretty close on it as far as light goes, but the Sciopticon is much more easily worked. It is a great improvement on the old form of lantern. It has, however, one defect which tells a good deal against it: as the edges of the lights are opposite the condenser, there is a space between them, which is reproduced partly on the screen; it thus does not give an evenly illuminated disc, which helps to spoil the effect of the picture shown, more especially if it be a delicate or fine one.

I now come to my own form of lamp. This is a great improvement, as far as regards brilliancy of light, on any other form of oil lamp that has been used for the lantern. It is equal, when burning under the same conditions as the other lamps, to fifty-eight standard candles. It gives a clear white brilliant light. In constructing this lamp, I have aimed more at getting a small quantity of extremely white light, than a larger quantity of yellowish light, which is not nearly so good. The smaller and more brilliant the light is, the better is it suited for the lantern. We have only to look at the lime light to illustrate this. As this form of lamp is meant to burn with edges of the lights to the condenser, it has the defect I have already spoken of in the Sciopticon, though in a less degree; but this is entirely remedied by turning the lamp very slightly to either side, so that the wicks are not in a straight line to the condenser; it will then give a beautiful, clear, and evenly illuminated disc on the screen. It will burn well in any ordinary lantern, and gives very little trouble, as it can be lifted in a few seconds. The cost of burning it is also very cheap, being something like one-halfpenny per hour. The light being very actinic, it is also first-rate for enlarging negatives.

The lime light. I give the value of the lime light in standard candles as used at our Society's Popular Meetings, but I do not here intend to say much about it. We all know its surpassing excellence for the lantern; but it requires some experience to work it well and safely. For large exhibitions it cannot be dispensed with; but for private use it is not every one that cares to be at the trouble and expense connected with it.



## "THE SPIRIT OF THE JOURNALS."

BY W. T. BASFORD.\*

THE month of October has seen much activity in all photographic circles. The American Conference met at Chicago, held a very successful exhibition, and before it closed liquidated a debt of \$3,500. Many interesting papers were read and discussed, many questions instructively answered, and much complacent talk was indulged in. The South London Technical Meeting has been held, a number of useful things were exhibited, and much friendly discussion took place. The London Photographic Exhibition was opened, with contributions from some of the leading workers, both home and foreign. Of course, much of the matter in the English journals relates to this large collection of pictures, and though the editors have kindly done their best to make things look as bright as possible, there is a suspicion of disappointment at the bottom of all they say. From personal inspection, I think that disappointment well founded; at any rate, with very few exceptions, the work exhibited was not of a character to excite enthusiasm. There seems still a jealous suspicion that matters are not conducted with fairness, and so long as this obtains, a hearty response from all our best workers to the invitation of the committee will be looked for in vain.

This month has given birth to two photographic societies, one in Yorkshire and the other in Belgium. The latter is quite a national affair, with its monthly journal illustrated by photography, and sections located in various parts of the country, as Brussels, Ghent, and Liege, &c. Reading its constitution makes one long for something similar in Great Britain. Surely it is time for such a movement to be set on foot. Nearly all the old societies have given in their reports, which, on the whole, are satisfactory, and, with each, work for the winter session has begun in earnest.

We have a valuable contribution to science in a series of papers, by Dr. Miller, exhibiting close experimental research, on the "Actinic limpidity of various gases, liquids, and solids; together with the photographic effects of various spectra obtained by means of the electric spark." Messrs. Sutton and Bolton are engaged in courteous discussion on the theory of the latent image upon an organized bromide of silver film. When two such able thinkers, experimenters, and writers attack a problem, the result cannot but be watched with the deepest interest and edification. In my estimation, Mr. Sutton is the light of photographic literature, and our fraternity throughout the world is to be congratulated that he still continues his weekly contributions.

The Editor of the *British Journal* opens the month by teaching us how to squint philosophically; this he does that we may be enabled to (a) see stereoscopically, without investing three shillings and sixpence in a stereoscope, (b) detect wrongly-mounted stereographs, and (c) know the actual appearance of a stereograph from the image on the focussing-screen of the stereo-camera: advantages by no means to be despised.

Interesting and instructive papers appear in favour of fuming sensitized paper, with the rationale for so doing; and the ammonia-nitrate bath with alcohol is recommended as a substitute for those who fear the trouble or imaginary danger of fuming. I would, however, warn those who may be tempted to try the methods suggested that, in its present state, it does not answer as well as might be wished.

Mr. Foxlee contributes a series of exhaustive articles on saving and reducing residues. They are evidently the outcome of practical experience, and the advice given is, of my own knowledge, thoroughly to be relied on.

Our American cousins are always specially prolific in formulae, and the past month furnishes quite a large selection. It is a curious fact, that when a photograph possessing special merit is exhibited, we find quite a number of people anxious to know the formulae by which it was pro-

duced, as though the beautiful results of much anxious study and unwearying exertion were the mere product of so many grains of gun-cotton, or so much acid, or, perhaps, a little morphia or zinc in the developer! With such process-mongers and mechanical dabblers photography would not rise to the work of a baker who weighs his currants, sugar, and butter; for while the latter may always produce uniformly good edibles, the former will often find his best efforts only give a wretchedly disheartening daub. Photography in its highest phase is the wedding of art with science, and an artist-photographer is no more governed by exact formulæ than he is by the ignorant nonsense with which some art scribblers fill up their paragraphs. There is often as much sense in asking a photographer for a formula, as in asking an artist how many bristles were in the brush by which he produced the sparkle in the eye, or dimple in the cheek, of one of his best portraits. And it is very encouraging to find that in the majority of the formulæ elicited from the exhibitors at Chicago, "great care," "much time," "long study," and such like expressions are principal factors; as with all works of art the chief ingredient of a very old formula is necessary, namely, "brains."

From the Continent we have Professor H. Vogel dealing with the same subject, while giving sensible advice to beginners. He recommends a sound theoretical knowledge, supplemented by a thorough practical experience under a really clever teacher, as a necessary foundation for all who are anxious to excel in our beautiful art-science; and sums up by stating that it is only long practice and study that make the skilful photographer.

At Chicago, Mr. St. Clair exhibited great distress at the danger to which photographers exposed themselves by adding glycerine to the negative bath, asserting that in such cases nitro-glycerine was immediately formed. Some gentlemen even testified to the losses they had sustained from this cause. Surely there is some mistake here! I always understood this dangerous compound was never formed except in the presence of sulphuric acid. I have used glycerine in my negative baths and collodion, yet, thus far, have received no injury from so doing; and since reading this I have boiled down an old bath to fusing without danger, yet this bath had a liberal dose of glycerine in it.

M. Cornu has introduced an ingenious plan for correcting astronomical objectives for the chemical rays; it consists simply in separating the flint and crown lenses of the object-glass about a half per cent. of its focal length. This operation will shorten the focus by about one-twentieth, and the aperture must be reduced by means of a diaphragm, so as to retain the same angular aperture. The same gentleman intends employing the Daguerreotype process for observing the coming transit of Venus.

A really valuable method for obtaining dense negatives is contributed by the esteemed French correspondent of the NEWS, M. Ernest Lacan. A very thin negative is obtained by ordinary iron development, and fixed in the usual way; it is then placed in an alcoholic solution of bichloride of mercury, after which a solution of iodide of cadmium is poured over the plate until all the bichloride is converted into the proto-chloride. There must be a careful washing between each operation. I have pleasure in submitting a copy of an engraving done by this process. The engraving is from a periodical, the thin paper of which was much discoloured, and the whole of the back was covered with letterpress, which showed through on the face of the engraving; yet it will be seen that the reproduction, from the finest lines to the broadest lights, is perfect.

Those who wish to experiment with the beautiful collodio-chloride process have presented to them a method of preparing two stable solutions, which, on mixing in equal proportions, make excellent collodio-chloride ready for immediate use; and in the same column of the NEWS may be found some suggestions on the management of

\* Read before the Edinburgh Photographic Society.



development. Time and space will not allow of its reproduction, but those who have not read it should turn to page 470. Those who have no faith in what is recommended should try it, and if they see nothing in it, try it again. I always employ a somewhat similar method, and cannot understand how any photographer can afford to do otherwise.

M. Edmund Becquerel contributes a most interesting paper on the action of rays of different refrangibility upon the iodide and bromide of silver; and in concluding, supports Dr. Vogel's observations on the value of various colouring matters (notably chlorophyll and coralline) being mixed with the collodion in order to render it impressionable by the red, yellow, and green rays, propounding several theories to account for the facts that repeated experiments have established.

In the *Revista Fotografica*, Signor L. Borlinetto publishes details of his new process for obtaining photo-lithographic transfers, by the addition of alum and nitrate of silver in different stages of preparing the ordinary gelatine film. He claims that the proofs are superior to those obtained by any other method yet published.

In connection with this subject, may I reiterate the appeal of a correspondent, "Will somebody invent a small and cheap lithographic press?" I think that by this time all difficulties in the way of reproductions in fatty inks would have been overcome, if the many amateur and professional photographers who are interested in the matter had placed within their reach a lithographic press for practical experiments.

A negative, from many causes, may be so damaged or imperfect as to be entirely unfit for the illustration of a book of travel, &c., yet a very imperfect print may be much superior to a hand sketch; and it is suggested by the Editor of the *British Journal* that such imperfect negatives may be utilized in the following manner:—Obtain prints of a blue colour by one of the ferrotype processes, then trace or etch over this in black ink, omitting all defects; a correct drawing is thus speedily obtained. Copy this by photo-lithography in the usual way.

Are we ever to have photography in natural colours? There are those who say unreservedly that it is an utter impossibility; others, by the superposition of very thin films of pigmented gelatine, representing the primary colours—each film produced from a special negative—hope to get a combination that in form and colour shall exactly represent the original model. By a somewhat similar principle others hope to get chromographs by the Albert-type and allied processes. The last phase is that in which, by the direct action of light alone, the primary colours are themselves formed in separate films, which it is hoped, by superposition, will produce a correct chromo-photograph. All these modes are ingenious, and the author of each deserves all honour for his unremitting exertions, fighting almost single-handed against difficulties that met him at every step; not the least discouraging would be the cold indifference exhibited by those who would reap the greatest benefit should his desires be realized. I do not now hear of any hope that a photographic positive in all the richest colours of the original can be directly produced in the camera, yet I have seen one such,—and never shall I forget the sight, or the excitement it produced.

An excellent article appears in the *Philadelphia Photographer* by Mr. Chute, on the proportion of light and shade in the photograph. It is especially worthy of thought and application at this time, and at this part of the country, where the style known among the vulgar as "Rembrandt photographs" is much in vogue. There is, however, little doubt that when the reaction sets in, as it has long ago done elsewhere, photographers will be great gainers by the knowledge they have acquired in seeking their sometimes startling abominations. Sir Joshua Reynolds found, after critically examining the works of those artists who best understood the management of light and shade, and whose works were the most universally pleasing, that their

general practice was to allow not above a quarter of the picture for the light, including in this portion both the principal and secondary lights; another quarter to be as dark as possible; and the remaining half kept in mezzotint or half shadow.

Our indefatigable corresponding secretary, Dr. Nicol, gives us the results of a series of experiments instituted in order to find out the value of supplementary exposure, and among his racy "notes" he makes some well-timed remarks about Mr. D. Winstanley, and what he sells as a secret.

Mr. Marchand has invented an apparatus for measuring the intensity of chemical rays; it is founded on the disengagement of carbonic acid from oxalate of iron under the influence of light. He has had it in action for the past five years. From the behaviour of the apparatus the inventor concludes that the chemical intensity of a June day is nearly twelve times that of an average day in December.

Dry plate workers have a happy future before them if all that is said about Mr. Phipps' bromide emulsion process may be relied on. Full details, from the manufacture of the emulsion to the development, may be found in his paper read before the Liverpool Photographic Association. It is similar to Mr. W. B. Bolton's process, and seems extremely simple. The plate requires no washing after it is coated, neither is a preservative applied. A large quantity of the emulsion may be made at one time, as it keeps indefinitely.

The Editor of the *Philadelphia Photographer*, in his extremely amusing "views abroad and across," which I am sorry to find are so soon drawing to a close, gives Liebert's process for enlarging negatives, which he is convinced is the same as a certain English process that has been much advertised during the past year. It is a modification of the collodio-albumen process applied to positives for transparency. Prepare the following iodizing solution:—

Iodide of ammonium	... 4 grammes	(61½ grains)
Bromide of ammonium	... 1½ "	(23 " )
Distilled water	... 75 "	(2½ oz. troy)

Add this solution to the whites of four eggs, about 100 grammes (3½ oz. troy). Beat to a froth, and allow to stand twenty-four hours, filter, albumenize the selected glass plates, then collodionize with any good iodized collodion, and, when quite set, wash under a tap; finish by washing in distilled water. Now cover with five or six coatings of the above iodizing solution, dry, and store away for future use. When a transparency is required, dip this plate, previously dried over a lamp if necessary, into the following aceto-nitrate bath:—

Nitrate of silver	... 80 grammes	(2½ oz. troy)
Crystallizable acetic acid	... 50 c.c.	(1¾ fluid oz.)
Distilled water	... 1 litre	(1¼ quart)

After an immersion of one or two minutes, wash in distilled water, and dry in the dark with care. Now place under a negative in a pressure-frame, and expose to diffused light from five to fifteen seconds. To develop, place in a dish of distilled water to soften the albumen, then proceed to develop with the following:—

Distilled water	... 1 litre	(1¼ quart)
Pyrogallal acid	... 7 grammes	(108 grains)
Acetic acid	... 30 c.c.	(1 fluid oz.)

The image will present a weak appearance, but may be intensified by adding a few drops of the following:—

Distilled water	... 1 litre	(1¼ quart)
Nitrate of silver	... 20 grammes	(380½ grs.)
Citric acid	... 5 "	(77 grs.)

Continue the development until the image has arrived at the requisite degree of intensity. Fix in hypo or weak cyanide.

#### ON AN UNSUSPECTED CAUSE OF SPOTS ON C.D.V. AND CABINET PHOTOGRAPHS.

BY W. T. BASHFORD.\*

THERE has not been a month during the past two years in which the photographic journals have not been engaged in

\* Read before the Edinburgh Photographic Society.



discussing the origin of numberless pepper-like specks that make their appearance on photographs. Several things have been held guilty for their appearance. One suggests imperfect fixation; another, careless washing; a third thinks they are caused by minute particles of iron, either in the metallic state or in the form of a salt, which find their way to the prints in the shape of dust; a fourth imagines the disease original with poisonous spores, and at once writes learnedly on the matter, arguing that measly photographs and measly children owe their disease to the same origin; while a lady is certain they are caused by tobacco ashes dropped from the cigars of her male friends. It is, however, generally acknowledged that one very fertile source, if not the chief—or, perhaps, only—cause, is the bronze powder used in printing photographic mounts.

I have for several years entertained the latter opinion, and, consequently, I determined that no bronze printing should enter my establishment. With this object I directed that my cards and other mounts should be printed in anything but gold-bronze, and in giving these orders I always stated my reason for so doing. Having done this, I felt at ease in regard to that trouble. Judge, then, of my disgust when the disease appeared upon my prints after all my care. These specks only appeared upon my cabinets, and then only when mounts from a new batch were employed. About this time some one suggested hypo in the mounts, but I judged the fading would be more uniform, or in larger patches rather than in well-defined dots, if hypo were the cause; and on examining the mounts with a magnifying glass, I found the cards were covered with my old enemy bronze-powder, the very thing I directed should not be used. This unexpected discovery leads me to warn my brethren not to be too certain that their own cards are free from this defect. In all probability my cards were printed near other cards that were being finished in bronze, and the fine dust will find its way in all directions if there be the slightest motion in the air.

I purposed bringing an unopened package of these mounts for your inspection, but our Secretary having called on me a few days ago, a package was opened in his presence. He drew his finger across several, and found the end of his finger presented quite a glittering appearance from the adherence of the dreaded particles. I have brought a few of the cards, which I lay on the table for the inspection of those interested. To be warned is to be forearmed, and my past experience will have been cheaply purchased if, by directing attention to this unexpected cause of fading, I remove one of the many difficulties which others, as well as myself, have to fight against while pursuing the fascinations of our often abused but much-loved art-science.

#### REPRODUCTION BY PHOTOGRAPHY OF CRYSTALLINE FORMATIONS AS THEY ARE SEEN UNDER THE MICROSCOPE.

BY M. I. GIRARD.\*

I HAVE the honour to present the Academy of Sciences with a series of photographs of different crystalline formations. In the first place, I experimented with ammoniacal salt, employing a magnifier of a dozen diameters, and afterwards proceeded to secure reproductions of the crystals of bichromate of potash.

There is a great advantage in operating by transmitted light if it is possible, because a greater intensity of light is thus secured. I employed an apparatus consisting of a metal frame-work fixed to a table carrying the camera. This horizontal frame-work was composed of different parts mounted upon a screw shaft, so that they could be moved to and fro from one another, and also nearer and further from the camera, at the will of the operator. The component parts were: 1, the lens, of one centimetre diameter, combined so as to give an enlargement varying from eight

to twelve diameters; 2, a pair of pinchers for carrying the slip of glass upon which the salt has been crystallized; 3, a screen of blue cobalt glass, to give a monochrome light, favourable for photographing purposes; and, 4, a plane mirror, moveable like all the rest of the apparatus, to reflect the solar light in the optical axis of the system.

The period of exposure given varied from an instantaneous one to two or three minutes, according to the transparency of the crystals. When a certain amount of relief is required to make the protuberances more evident, use is made of oblique illumination, by depressing the mirror slightly upon its axis. Although the brilliant effects of polarisation are apparently without any effect upon the photographic film, they permit, under certain circumstances, of detaching the crystals from a black ground, and this allows of details of a delicate nature being produced, which it would be impossible to obtain by the aid of direct light alone. The polarising apparatus is composed of two pieces, the polariser and the analyser; the first of these is placed before the lens, the second between the camera and the lens.

To prepare the crystals for photographing, a solution of the salt is put upon a slip of glass, and allowed to dry upon a perfectly level stand, so that the crystals when the salt is desiccated shall be of the same thickness throughout. It is well to prepare solutions of different degrees of concentration, so as to have a choice in photographing the objects, for some specimens will be found to possess a more definite character than others.

#### AN ENAMELLING PROCESS.

BY I. B. WEBSTER.\*

THE glass upon which the enamelling is to be done must be scrupulously clean—plate glass, free from scratches, is the best. After being thoroughly cleaned, some powdered talc or French boot powder must be sprinkled on the plate, and with a tuft of cotton rubbed in a circular motion lightly until no traces of the powder are perceived. This gives it a surface which causes the collodion to be easily removed from the plate without sticking. Flow the plate with a collodion made of—

Ether	...	...	...	4½ ounces
Alcohol	...	...	...	3¼ "
Gun-cotton	...	...	...	30 grains
Castor oil...	...	...	...	24 drops.

Let it dry, and now immerse the prints in a solution of gelatine made as follows:—

Cox's gelatine	...	...	1 ounce
Water	...	...	8 ounces
Glycerine	...	...	50 drops.

Put the gelatine and glycerine in the water and let it stand all night, when it will be ready for use, after filtering, which may be done by warming sufficiently to render it limpid. After immersing five minutes, take out the prints and place them face downward on the collodionized plate, then roll with a gum roller lightly, to press out surplus gelatine and air-bubbles. After the prints have set for an hour they must be mounted, using gelatine for the purpose, putting it on the back of the print with a brush, and placing the mount on the print, and keeping it in place by means of a glass on the back, with a weight sufficient to flatten. It may remain thus some ten or fifteen minutes, after which the glass can be removed and the whole allowed to dry, which must be thorough, but without the use of heat. Frequently the prints will come off themselves when dry; if not, by running a knife blade around the edges they will easily leave the glass. This formula can only be used successfully on cards and imperials by printing the picture on paper a little larger than the mount; and, by masking the picture, print a border to it representing the black mount, the design for which a patent has been applied for.

\* *Comptes Rendus.*

\* *Anthony's Bulletin.*



# The Photographic News.

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## THE TRANSIT OF VENUS.

ON Wednesday morning photography took the chief part in securing one of the most important scientific records to which it has ever been applied since its birth. The transit of Venus, an event the preparations for which have been in progress for some years, and for securing a successful record of which observing parties have been sent to all parts of the globe by different governments, has been successfully observed by the majority of the expeditions from which telegrams have been received. With the nature and importance of these observations the majority of our readers are doubtless already more or less familiar, and we need not dwell in detail upon the matter here. Upon accurate and detailed records of the various phases of the phenomenon depend accurate knowledge of the exact distance of the sun from the earth, at present a matter not definitely ascertained. Upon an accurate knowledge of the sun's distance depends an accurate estimate of its size, and also of the distance and dimensions of the whole solar system. A daily contemporary admirably summarizes the general human interest which belongs to the subject. He says:—"When we consider the wonders which have been revealed by modern researches into the structure of the sun, when we see his noble orb strewn at one time with enormous spots, and at another absolutely without spot or blemish, when we consider how all around his globe are flames of glowing hydrogen, leaping up in places to a height many times exceeding the diameter of this earth on which we live, we recognize the importance of determining the real scale on which these tremendous processes are taking place. It is because we already know the sun to be so far away, and therefore so large, that we find the phenomena of solar physics so impressive, for we know that the very least sign of change detected in the sun's orb from our distant standpoint implies processes so stupendous that the whole earth could not exist even where they were in progress, but would in a few moments be reconverted into the vaporous condition from which she passed millions of ages ago. Regarding the sun as the great storehouse whence the supplies of light and heat necessary for the well-being of our earth are lavishly distributed, we find it a matter of even greater interest to determine on what scale the mighty centre of our system has been framed." Any approach to accuracy in final results can only be obtained by securing the mean of many observations. Minute error in instruments, observations, or records, may most seriously vitiate results when such error becomes a fact in extended calculations. The observations upon which former calculations have been made were comparatively limited, and the means much less perfect than now exist. This is the first occasion upon which

photography has had opportunity of taking part in such an important undertaking, and upon its aid the highest hopes are fixed. We have given details from time to time of the precision and care which have been exercised in the various photographic preparations to avoid possible chance of failure, and the telegraphic summaries which arrived on Wednesday, and appeared in our daily contemporaries yesterday morning, gave ground for belief in complete photographic success. We append some condensed extracts from the telegrams.

The *Daily News* special correspondent telegraphs from Cairo:—"The Egyptian expedition for the observation of the transit of Venus has met with complete success. At the Mokattam Heights and at Suz the egress was observed in all its phases. At Thebes, in addition to these observations, a series of fifty photographs were taken with the Janssen's slide by Captain Abney, including the critical instant of contact."

The Astronomer Royal has received a similar telegram, stating that the results were perfectly successful. We may incidentally remark that this is especially interesting to dry plate workers, Captain Abney having, as our readers know, employed collodio-albumen plates and Col. Wortley's strong alkaline developers. From Roorkee, India, the Astronomer Royal receives similar intimations of success, one hundred photographs having been obtained by Col. Tennant's party. At Calcutta, also, the observations were excellent, and also at Kurrachee. At Shanghai and Madras cloudy weather frustrated the aims of the observing parties. At Nagasaki, Japan, notwithstanding some clouds, successful observations were made, sixty good photographs being secured. At Siberia, also, clouds prevailed, but the photographic operations were successful, and thirteen good plates were secured. Some other results from Asiatic stations remain to be recorded, as well as all the results obtained at stations in the South: tidings not having yet arrived from Australia, New Zealand, the Sandwich Islands, and other points of observation in the Southern Seas.

## FRENCH CORRESPONDENCE.

THE last meeting of the French Photographic Society was scarcely so interesting as the previous one; nevertheless, there was a useful application of the Reflectoscope shown, which is, as I have previously mentioned, an enlarging instrument for opaque bodies, invented by M. Van Tenac. With the assistance of the inventor, M. Davanne availed himself of its use to project and enlarge upon a screen some positive prints that had become spotted, and which have recently given rise to discussions on every side. In this way the spots may be studied with ease, and their physical constitution—or, in other words, their characteristic nature—made clearly manifest, so that their chemical cause may be more accurately determined. In this demonstration one was able to judge better of the useful nature of M. Van Tenac's new instrument, and of the importance it will be in scientific demonstrations. The magnesium light, or Solomon lamp, was made use of the other night, but M. Van Tenac profited by the occasion to show the power of illumination produced by a current of oxygen gas passing over the flame of an ordinary oil lamp. The light thus obtained is so white that the gas jets in the hall appeared quite yellow by comparison. Nothing is so simple as the practical application of the system, the employment of which is especially favourable to the reflectoscope to obtain enlargements from clichés. A few seconds only are necessary to produce an excellent negative.

M. Rousselon exhibited to the members of the Society a large series of magnificent prints reproduced from paintings at the New Paris Opera House, by the eminent artist Paul Baudry. But what was the most admired of his exhibits was a new collection of engraved plates of reproductions of paintings, which M. Rousselon exhibited at the same time.



On his side, M. Thiel, senior, showed a fine collection of prints in greasy ink by a process of his own, which is now in full working order. The warmest partisans of the old silver printing process were forced to admit that these reproductions, so varied as regards their subject and dimensions, were in no way behind impressions produced by the aid of chloride of silver. It is indisputable that the method of printing in greasy ink is about to be very widely taken up by photographers, and for this reason particular interest was manifested in a new phototype press, of which I have already spoken as the invention of M. Poirier, on whose behalf it was exhibited by M. Monck. The latter, who has employed the apparatus for some time, showed its capabilities before the eyes of the members.

Much has been said lately regarding the carbon process of M. Lambert, the inventor of Lambertype. This process is, it is said, so simple, so sure, and so perfect that it constitutes a true revolution in the art of printing in permanent pigments. Before even anything has been published on the subject, a large number of portrait photographers have acquired the right to practise the art—among others MM. Lewitske, Rentlinger, Franck de Villechole, Liébert, Truchelat, Lumière of Lyons, &c. M. Hutinet has purchased, it is said, the patent for England, and the process will be a happy perfection of Lambertype. This is all I know of the matter at present, but I will not delay making the readers of this journal acquainted with the facts.

MM. Delachanal et Mermet have presented to the Academy of Sciences, through the medium of M. Dumas, the Permanent Secretary, a very exhaustive memoir respecting the lamp of bisulphide of carbon and binoxide of nitrogen, of which I spoke in my last letter. When binoxide of nitrogen is inflamed in a flask containing sulphide of carbon vapour, there is produced a powerful illumination, but the fugitive flame thus obtained may detonate instantly on the mixture of chlorine and hydrogen. The violet-blue tint of the light indicates its high photogenic qualities, and experience confirms the same.

The lamp which allows of the production of a continuous flame of this kind is composed simply of a flask with two openings, of five hundred cubic centimetres capacity. This flask is filled either with fragments of sponge, coral, or, better still, dried pumice-stone, impregnated with bisulphide of carbon. In the central aperture passes a tube, which reaches to within half a centimetre of the bottom of the flask; while to the other opening is fixed a tube of considerable diameter, about twenty centimetres long. This is of glass or metal, and contains iron filings well rammed down. This latter constitutes the safeguard, and prevents the return of the flame towards the reservoir, and is for the purpose of preventing an explosion. Some binoxide of nitrogen is passed into the flask, and the mixture of the two gases is conducted by an india-rubber tube to a sort of Bunsen burner which has been deprived of its supply of air, and of the little conical adjustment which regulates the current of gas; this jet is, in the same manner, filled with iron filings.

The binoxide of nitrogen is produced cold in a large apparatus of M. H. St. Claire Deville; not by aid of the decomposition of nitric acid by copper, which is an expensive method of generation, but by making use of the action of iron upon a mixture of nitric and sulphuric acids in proper proportions.

One of the flasks contains a layer of porcelain fragments, upon which are put some bits of wrought iron; the other is filled with a mixture of acids. The communication is established by means of a wide india-rubber tube attached to the lower openings; finally, a stopcock, passing into the cork of the vessel containing the iron, allows one to regulate the current of gas. With an apparatus of suitable dimensions, a flame twenty-five centimetres high may be obtained.

A special experiment was made to test the intensity of the light generated by this flame. Some chloride of silver,

after precipitation, was collected upon the surface of a piece of cardboard, and was put into a small camera, illuminated by the lamp of which we have been speaking. This film of chloride, after a few seconds, began to assume a violet tint, indicative of energetic reduction. The photogenic intensity of the light, according to M. Franck de Villechole, is much superior to the artificial light usually employed by photographers, as will be seen by the following.

The flame having been produced in a sheet-iron cage supporting a lens on one of its sides, the image from a glass positive was projected upon a sensitive plate. A cliché, enlarged to a quarter life size, was obtained in ten seconds. The same operation executed with a magnesium lamp burning two ribbons was less prompt and less successful, while the illuminating power was much more difficult to regulate. The lamp illuminating the camera was then placed two metres distant from an engraving, and without the assistance of lenses or reflectors a negative was secured in five seconds. Finally, a portrait was produced in about fourteen seconds, the model being placed about two metres from the lamp.

According, therefore, to those repeated experiments, the investigators estimate that the light is superior, so far as its photogenic power is concerned, to that of magnesium; that it is twice as energetic as the oxy-hydrogen lamp, and three times more actinic than the electric light. M. Stebbing has since experimented with this new lamp, and his results bear out those to which we have referred.

ERNEST LACAN.

#### ON THE PHOTOGRAPHIC TRANSPARENCY OF VARIOUS BODIES, AND ON THE PHOTOGRAPHIC EFFECTS OF METALLIC AND OTHER SPECTRA OBTAINED BY MEANS OF THE ELECTRIC SPARK.

BY W. A. MILLER, M.D., LL.D.\*

63. *Olefant gas.*—Some difficulty is experienced in observing the spectrum of this gas, owing to the copious deposition of carbon which occurs immediately that a current of sparks is transmitted. The nature of the electrodes employed seems to exert considerable influence upon this decomposition. It is extremely intense when aluminum electrodes are used, but comparatively slight with gold. Observations made when gold electrodes were employed exhibited a spectrum which could not be distinguished from that of carbonic acid or of carbonic oxide.

64. *Marsh-gas.*—Sparks pass freely in this gas. The spectra obtained with gold and copper electrodes cannot be distinguished from those of the same metals in carbonic acid and carbonic oxide. A scanty separation of carbon occurs during the passage of the spark. This is particularly evident when copper electrodes are used, the bluish light of the metallic spark being frequently accompanied by reddish-yellow scintillations; the deposition of finely divided carbon upon the quartz plate on the side of the gas-tube impairs the intensity of the photograph.

65. *Cyanogen.*—A difficulty was experienced in this case also in obtaining intense photographs, particularly when silver electrodes were employed; a rapid deposition of a brown matter, probably paracyanogen, took place upon the interior of the tube. When copper electrodes were used, the light of the spark was sometimes of an intense green, at others of a pale blue. The photograph showed the particular lines due to carbon as well as those of nitrogen, and the special lines due to the metallic electrode employed.

66. *Sulphurous Acid.*—This gas offers unusual resistance to the passage of the electric sparks, the electrodes requiring to be brought very close to each other before the disruptive discharge passed freely. This difference in the power of different gases to modify the striking distance has already been examined by Dr. Faraday.† A strong

\* concluded from page 578.

† Philosophical Transactions, 1863, p. 103



spectrum was obtained with gold wires; it terminated abruptly at 113.5, a single spot of renewed action appearing at 143.0. This result is due, no doubt, to the absorbent action of the gas, which has been already shown, in a former section of this paper (18), to be one of the least diactinic of gaseous bodies. In this form of experiment the stratum of gas traversed by the rays before they entered the air amounted to about half an inch in thickness.

67. *Sulphuretted Hydrogen*.—This gas also offers considerable resistance to the passage of the electric spark. It is decomposed by the spark with deposition of sulphur. When gold electrodes are used, it furnishes lines resembling those of the same metal in air. With silver electrodes the gas was decomposed very rapidly, and no lines were produced beyond 113.5, the absorbent action of the gas being strongly manifested.

68. *Ammonia*.—Sparks pass in this gas as freely as in air; the spectrum of each metal is the same as in nitrogen; no new lines are visible in the photograph. Most of the atmospheric lines are distinct.

69. *Protoxide of Nitrogen*.—The electric sparks pass in this gas with much greater difficulty than in air. The spectrum appears to be the same as that produced in air, and no new lines are apparent in the photograph.

70. *Nitrogen*.—The spectrum of this gas, when gold or platinum electrodes are used, commences with a pale continuous spectrum, which slowly diminishes in intensity; this continuous spectrum appears to increase in intensity with the volatility of the metal, being well marked in the case of magnesium, sodium, and potassium; at about 151 it terminates abruptly. The spectrum of nitrogen is crossed between 96.5 and 100 by two strong double lines; it shows an indistinct line at 108.5, a strong one at 110.5, three feeble lines at 113.5, 118, and 122, a faint band at 138, and another at 150.

71. *Oxygen*.—This gas was obtained from black oxide of manganese heated with sulphuric acid. It gave, after purification by passing through a solution of caustic soda, lines identical with many of those obtained in atmospheric air. When the gas contained traces of carbonic acid the lines due to the compounds of carbon were distinctly visible in the impressed spectrum. With platinum electrodes and with pure oxygen, a feeble, nearly continuous spectrum extends to about 122.5; it also contains numerous lines extending as far as 142.5; beyond that, the impression is more feeble, terminating at about 156. The principal lines due to the gas are the following:—A broad line about 100, then two faint lines, beyond which, at 101.5, is a double line; a strong complex group at 103.5; a feebler one at 105.5; one rather stronger at 107.5; a double group of considerable strength at 112; another stronger at 114; between 116 and 119 is a group of six rather faint lines; after this there are no prominent lines until 138.2 and 141.5; at 153 is a strong compound line, and beyond this only the dotted lines of platinum are seen.

72. *Chlorine and Hydrochloric Acid* give spectra which can scarcely be distinguished one from the other. With platinum points these spectra terminate by an abrupt band at 156.5. Their most marked features are a strong compound band at 96.5, and one still more marked at 100; then two lines, of which the first at 103 is the stronger, followed by two others, of which the second at 108.5 is the stronger; several fainter lines follow these lines. A group of six between 126 and 133, the most marked of which is a broad band terminating at about 130. Several faint lines intervene between this and another broad band at 140, followed by several others less distinctly defined.

I attempted to obtain the spectra of iodine and bromine by employing a current of hydriodic and hydrobromic acid; but the results were not satisfactory. It is very difficult to maintain a steady current of sparks through these gases, and not easy to keep up a continuous current of the pure and dry gases, which are immediately decomposed by the passage of the electric spark, with extrication of dense fumes of iodine or of bromine.

## Correspondence.

### IMPROVED TRIPOD STAND.

DEAR SIR,—I received the NEWS this morning, and am glad Mr. Oakley has written to you on the subject of the "Improved Tripod Stand," because he has removed an impression from my mind which was an unjust one. He has not borrowed an idea from me, nor I from him.

He says in his last sentence, "The bolts in my stands have large heads, and under the fly-nut is fitted a large brass washer," &c. This proves his arrangement is not different from the old French tripod stand, though he may have improved it in some way. At any rate, it is quite different from mine, the lower or sliding portion of which consists of one solid piece of ash, one inch wide by three-quarters of an inch thick, instead of the double continuation between which his "bolts" must work; and in this difference (mine also being fixed by a screw pressing against the sliding part) consists my invention, or improvement, as it enables me to make my tripod lighter, stronger, and firmer. I have never seen Mr. Oakley's tripod, or I should not have troubled you on the subject.

I must, however, state that I prefer my revolving levelled block (which I think, thus applied, also new) to his ball and socket, because the latter would necessitate the re-levelling of the camera for each successive plate of a series in taking a large panorama, creating, probably, great inexactness; whereas, I must repeat, my camera once levelled properly, the block is *always* level, and the camera only requires to be turned by very slightly loosening a screw (between two dowells), which fixes the camera to the stand, and which is tightened again when the new point of view has been decided on.

The objections named by Mr. Oakley I have not found in practice, and it is impossible for the block to get out of order, while the ball and socket may; the former, I should say, being also much less expensive, and answering admirably.

Mr. Oakley has misconstrued the cause of my disappointment. I was not annoyed that any one had imitated my legs, but that any one claimed as copyright what I supposed to be mine, and which I wished should be *pro bono publico*, as I still desire, believing, as I do now, that my arrangement forms no part of Mr. Oakley's copyright.

I omitted to say that my tall legs are three feet five inches long, without the tripod head and block, altogether 1½ inch above them, and that they extend to exactly seven feet to the centre of the grey glass of a 10×8 horizontal camera when set up.

I think your remark that my legs "admit of more extension" than Mr. Oakley's will be found correct—*e.g.*, a four-foot leg may be extended, perhaps, to about a foot more than his No. 2.

I shall not trouble you any further on the subject, and only hope that the discussion may have done some good. —I remain, dear sir, yours faithfully,

Catherston Manor, Dorset, Dec. 5th. T. H. PARKYNS.

PS.—It is important that the two dowells act so as to make the block and the camera really one (except for convenience in packing), the fixing screw passing from under the wooden tripod head *through the block*, into the bottom board of the camera.—T. H. P.

### LIFE-SIZE PORTRAITS.

SIR,—I have to thank you for the note appended to my letter in your last issue. But the portrait alluded to by Mr. E. M. Ward and Mr. S. C. Hall was in truth the life-size of the lady represented, viz., 7½ inches from top of forehead to bottom of chin.

I think the general disfavour with which the life-sized heads shown in the Crawshaw competition have been received is due to Mr. Crawshaw's having drawn the hard and fast line as to size in inches, instead of varying life size, leaving



it then to the judges' discretion. We might then have had life-size pictures from a child with head of 6 or 6½ inches, to a man with head of 8 inches. As it was, many of the female heads were over average life-size, and therefore bore the appearance of exaggeration.—Faithfully yours,

H. STUART WORTLEY.

#### KENNETT'S GELATINE PELLICLE.

SIR,—In your issue of the 20th of November Mr. Aldridge complained that Mr. Kennett was out of pocket by what he called "his discovery," and in your issue of the 27th I ventured to point out that there was no "discovery" as regards Mr. Kennett in the making of a gelatine emulsion, and that as Mr. Kennett had speculated in a patent he must abide the results of his speculation, and I concluded my letter with the following paragraph:—"He is indebted to other workers for the emulsion itself, and, in my opinion, should have considered this before attempting to take a patent. That the patent itself is not sound is no argument one way or the other." In your issue of the 4th December Mr. Kennett attacks my letter, and I now propose to answer his attack. He asks me to name for the information of your readers the person to whom he is indebted for the process he has patented, and he further goes on to intimate that I have accused him of stealing the brains of those persons for his own benefit.

I am bound, therefore, in self defence to give chapter and verse for every statement I made in my former letter. In order that you may see how completely Mr. Kennett has stolen the brains of other persons for his own benefit, I will ask you to print in columns side by side the following extracts from the photographic press and Mr. Kennett's own specification, which latter I beg your readers to bear in mind is dated the 20th November, 1873.

*Published by Dr. R. L. Maddox, on the 8th Sept., 1871, and again published on the 8th Aug., 1873.*

Thirty grains of Nelson's gelatine were washed in cold water, then left to swell for several hours, when all the water was poured off and the gelatine set in a wide-mouthed bottle, with the addition of four drachms of pure water and two small drops of aqua regia, and then placed in a basin of hot water for solution. Eight grains of bromide of cadmium dissolved in half a drachm of pure water were now added, and the solution stirred gently. Fifteen grains of nitrate of silver were next dissolved in half a drachm of water in a test tube, and the whole taken into the dark room, when the latter was added to the former slowly, stirring the mixture the whole time. This gave a fine milky emulsion, and was left for a little while to settle.

*Extract from Mr. Kennett's Specification, 20th Nov., 1873, No. 3782.*

My said improved substance or compound consists essentially of gelatine or gelatinous matter in combination with nitrate of silver and with bromide of potassium, bromide of cadmium, bromide of ammonium, or with the chloride or the iodide of either of these salts in combination with either of the bromides above specified. In making the said compound I prefer to employ the following materials and process: that is to say, I place in a dish or pan of porcelain or other suitable material about one pound of the substance known as Nelson's gelatine, or other suitable gelatinous matter, to which I add about one hundred ounces of distilled water. This mixture of gelatine and water is allowed to stand for about three hours to soften the gelatine, and is then heated by a hot water bath or otherwise until the gelatine is thoroughly dissolved. I then add to the mixture or compound about eight and a quarter ounces of the bromide of potassium dissolved in water, and which must be thoroughly incorporated with the gelatine by stirring. I then incorporate with the said compound, while stirring the same, eleven and one-half ounces of nitrate of silver dissolved in water. The whole of the above operations must be effected while the gelatine is hot.

Note how closely Mr. Kennett follows Dr. Maddox, even to the order in which the materials are added, and the "stirring." I think the above two extracts are sufficient answer to Mr. Kennett as to whose brains he has stolen with regard to the making of a gelatine emulsion; but Mr. Kennett goes further in his specification than the mere making of an emulsion, for, as I pointed out in my original letter, he patents the drying of the gelatine and reducing it to a solid substance easy of carriage. We will now see from whose brains he has stolen this idea.

*Published on the 14th Nov., 1873, by Mr. J. Johnston.*

To make the gelatine-bromide emulsion, put half the gelatine to be used into one vessel, and the other half into another. Now pour as much bromide of cadmium solution into one of the vessels, and as much nitrate of silver solution (measured) into the other, as will cover the gelatine.

When the gelatine is swelled sufficiently, pour the solution off, and measure; by that means the quantity of bromide and silver taken up by the gelatine will be ascertained. Keep the bromide in excess of its equivalent of silver by adding bromide solution if required. Heat both the quantities of gelatine until dissolved, then mix, stirring with a glass rod. Let it stand till cold, cut in slices with a piece of thin glass, and wash in distilled water to remove the excess of bromide.

Note here, again, how closely Mr. Kennett follows Mr. Johnston's words. Does this make it sufficiently clear to your readers from whose brains the idea was stolen of reducing the emulsion to a solid compound, thus rendering it easy of carriage between manufacturer and customer?

At the end of Mr. Kennett's patent the following is the claim he makes:—"I claim a substance or compound for forming photographic emulsions, which, when prepared in a dry or solid condition as herein set forth, will remain perfectly good and fit for use for any required time."

Now, sir, the extracts you have printed side by side arc, I think you will admit, ample evidence in proof that Mr. Kennett was indebted for the emulsion itself, and the idea of reducing it to a solid material, to the labours of others. When, then, Mr. S. S. Young talks of my having brought a vague charge, and of the antipathy of a rival manufacturer, he talks of what he does not understand. The charge is now no longer vague, and as the claim made in the patent is for the "substance prepared in a solid condition," the method of doing which I have shown was published seven days before the date of Mr. Kennett's patent, the whole patent is worthless, and any rival manufacturer is at liberty to make dried gelatine pellicle, if anyone thinks it worth while.

Mr. Kennett, in his letter last week, says he has numbers of letters thanking him for placing the process in the writers' hands, and on this I desire to say a few words. Mr. Kennett has done exactly the reverse. The processes were placed in the hands of the public through the press by Dr. Maddox and Mr. Johnston, and Mr. Kennett endeavoured to prevent their public use by patenting them.

Now I freely admit the great value of patents to protect inventions; in photography they have done great good, for it would have been impossible for the capital to have been found to bring the carbon printing and Woodburytype to their present successful development had they not been protected; but when I find anyone in the position of Mr. Kennett, whose name has been hitherto unknown in photography, going to the Patent Office and taking a patent for, possibly, valuable commercial matter which had attracted his attention in the press the week before (for bear in mind Mr. Johnson's paper was published November 14th, and Mr. Kennett's patent taken November 20th), and thus endeavouring to seal up a process that is really public property, I strongly object, and I call on the photographic brotherhood to say whether such conduct is not worthy of condemnation. My note-book shows that on Monday, November 17th, I prepared, and brought into a solid and dry condition, a lot of gelatine emulsion for experimental purposes—some of it has remained good to this day; and it would be absurd for a patent, dated November 20th, to prevent anyone doing the same.

In fact, the process is perfectly open, and the Liverpool, or any other Company, are free to make pellicle without let or hindrance, Messrs. Kennett and Aldridge notwithstanding.—Yours, &c.,

A WORKER.

At this stage of the process the said compound or emulsion will contain free bromide of potassium, and nitrate of potassa, which must be eliminated, and which I eliminate as follows:—I pour the emulsion into glass or porcelain dishes to the depth of about a quarter of an inch, and let it stand long enough to become cold. I then remove it from the dishes, and cut it in small strips and wash it with many changes of water, or in running water, until the free salts are all dissolved out. I then dry or desiccate the substance or compound to render it capable of preservation for any length of time, and therefore fully accomplish the object of my invention.



DEAR SIR,—In your journal of Nov. 20th appeared a short letter of mine, in confirmation of that of a correspondent signing himself "A Portrait Painter." In that letter I ventured to give Mr. Kennett some advice, for which I am responsible, and which, of course, my friend Mr. K. is at liberty to follow or not, as he thinks best. In the NEWS of last week appeared a letter signed "A Dry Plate," and containing so much personal abuse of myself, that I cannot allow it wholly to pass, at the same time that I must decline to enter into a controversy of the sort with an anonymous writer. As "A Dry Plate" appears to have such strong feelings on the subject, let him back them up with his name: I shall then know how to answer him. I dislike stabbing in the dark, and have an equal antipathy to fencing with a shadow.

"Give me but light, and let me see my foes,  
I'll bravely fight, though Jove himself oppose."

There is one assertion, however, in the letter of "A Dry Plate" that I cannot pass without contradiction. Your correspondent affects to be very particular about the date of my previous letters, and then goes on to state that I introduced the pellicle six months ago. Now, as Mr. Kennett read a paper, and exhibited both negatives and prints at the Technical Exhibition of Nov., 1873, notices of his preparation having previously appeared in the journals, it is evident that "A Dry Plate" has allowed his imagination to totally overpower his memory, or else is in the habit of writing what first comes into his fingers.—Yours truly,

R. W. ALDRIDGE.

## Proceedings of Societies.

### PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

THE usual monthly meeting was held in Conduit Street on the evening of Tuesday, December 8th, Mr. J. Spiller, F.C.S., in the chair. The minutes of a previous meeting having been read and confirmed, the following gentlemen were elected members of the Society: Messrs. E. A. Coe, Joseph Gale, and W. Pitt.

THE CHAIRMAN announced that as all the officers would go out of office, it would be necessary for members next month to nominate a completely new staff, President, Vice-Presidents, all the members of Council, and Treasurer, for election according to the rules at the annual meeting in February.

MR. HUGHES asked under what rules the Council was proceeding. The rules brought forward during the year had never had the sanction of the Society; he himself had protested against them being passed at a small meeting in the dog days, and at the annual meeting they would require considerable revision.

THE SECRETARY, referring to the minute-book, said that the laws had been duly passed, Mr. Hughes' motion to postpone their adoption did not meet with a second. Until the annual meeting—when modifications might be made—the Council could act upon no rules but those then passed.

MR. HART made a few remarks on the want of some proper place to keep the books and pictures of the Society.

MR. MUNDY's paper on "Photography in New Zealand" was then read, and was followed by an exhibition by means of the sciopticon of many fine New Zealand views, especially illustrating the extensive geyser system. Mr. Mundy described the views, and Messrs. Bool took charge of the lanterns.

The proceedings then terminated.

### EDINBURGH PHOTOGRAPHIC SOCIETY.

THE second ordinary meeting of the session was held in 5, St. Andrew Square, on the evening of Wednesday, the 2nd inst., the President, Dr. THOMSON, R.N., in the chair.

The minutes of the previous meeting were read and confirmed, and the following gentlemen were admitted ordinary members:—Messrs. James Steele, W. Hurin, W. Haldane, John Dick, R. C. Paterson, Andrew Smart, John A. Leechman, James Mill, and Ex-Bailie Wilson.

This was the most largely attended of any ordinary meeting since the formation of the Society.

THE SECRETARY stated that a number of members had intimated their intention of contributing photographs for distribution by lot amongst the members present at each meeting throughout

the session, in the manner found so successful two years ago; and laid on the table some fifteen, for that night, the joint contribution of himself and the President.

THE CORRESPONDING SECRETARY laid on the table the first three numbers of the Journal of the Belgian Photographic Association, and stated that he had had several communications from the Secretary of that young society. He said that from the journals it would be seen that they were doing the work of the society in a very workman-like way, and he had no doubt that they would make it a great success. An interesting feature in their journal was the giving in each number a specimen print by one or other of the various carbon processes. The specimen in No. 3, a *photo-autotypie*, was a little gem that did credit both to the photographer and the printer. The same number, he might say, contained a *multum in parvo* resumé of carbon printing, from Mungo Ponton downwards, from which, as Edinburgh men, they would be glad to see that it was acknowledged that the real foundation of permanent printing was laid in their own city.

THE CORRESPONDING SECRETARY was instructed to convey the thanks of the meeting to the Belgian Photographic Association, and to congratulate the members on the success which had already attended their efforts in the formation of the society.

MR. W. T. BASHFORD then read a paper, "The Spirit of the Journals" (see page 591). Before doing so, however, he stated that it was not until he saw the billet that he knew so much work had been laid upon him, as he understood that another gentleman had undertaken the work. As it would not do for one who had been honoured by a seat at the council board to set a bad example, he had done the best he could, although, as he had been called on to distil the "Spirit of the Journals" with only a few hours allowed for fermentation, they must not expect anything but an unsatisfactory distillate.

THE President, Mr. W. Neilson, and others, complimented Mr. Bashford on his paper, and hoped he would allow himself to be elected permanent distiller to the Society, assuring him that, judging by the quality of the spirit produced, the fermentation had been complete.

DR. DICKSON wished to call attention to the method of seeing stereoscopically without a stereoscope, noticed by Mr. Bashford. He said that Dr. Nicol had taught him to do this more than fifteen years ago, and for some time he had amused himself by examining the pictures in shop windows in that way. He was sorry to say, however, that a rather unexpected and disagreeable result had followed the practice—a serious case of astigmatism, from which he still continued to suffer. In fact, he said, he had ever since that time seen all objects double, unless when he corrected the fault in his eye by suitable lenses. It was the opinion of oculists generally that astigmatism was always congenital, and never made its appearance accidentally; but his case was a very striking proof to the contrary. He could not, of course, say that the astigmatism had been caused by the squinting, but he thought it right to mention the circumstance, as it might possibly attract the attention of those interested in the subject.

MR. ROSS agreed with almost every word that Mr. Bashford had said, but especially with his remarks regarding the so-called Rembrandt effects. He was sure that if that painter were to revisit the earth, he would be ashamed to bear his name connected with such trash. He was sure that the old style of lighting was in every way much better.

MR. BASHFORD then read another paper on "An Unsuspected Cause of Spots on Carte-de-Visite and Cabinet Photographs" (see page 592), and handed round a number of cabinet-mounts, on which, although there was nothing visible to the naked eye, the point of the finger, when rubbed across the surface, became coated with a dark but shining metallic bronze.

MR. TURNBULL then read a paper on "The Photometric Value of Different Lights Used in the Lantern" (see page 589), and exhibited an improved lamp for burning paraffin oil, showing at the same time a number of pictures by means of a lantern lighted with the lamp. The lamp is an improved form of one exhibited before the Society last year, and is constructed on the principle of that used in the sciopticon, the object being, by the addition of a third wick, to get rid of the shadow which passes perpendicularly across the screen, and to give a whiter and more brilliant light than the sciopticon lamp.

DR. NICOL was glad that Mr. Turnbull still continued his experiments with a determination to improve the lantern lamp. Although he did not hope that it would ever equal the lime light for the purpose, there were many cases where it would be really of more value. Many a pleasant evening could be spent with a few friends over a number of pictures in circumstances



where the latter was altogether out of the question, but in which such an arrangement as Mr. Turnbull was labouring to perfect would be invaluable.

Mr. Ross could not say that he was at all satisfied with the performance of the lamp; the light was, he thought, a little better, but there was a want of steadiness which was very objectionable, and the images of the three flames on the screen were really worse than the shadow from the original lamp. He must say he liked the scription better.

Mr. TURNBULL said, in reply, that the lamp had been shown to very great disadvantage. He discovered only when he came into the room that the lantern would not admit of the lamp being turned to the angle at which the shadow was got rid of, and that the lens would not screw into the flange, and had to be held in the hand. From exhaustive experiments, he knew that the lamp was much superior to that with the double wick, both in colour and brightness, and should take an early opportunity of showing such to be the case to the satisfaction of the members.

Votes of thanks were given to Mr. Bashford, Mr. Turnbull, and the donors of the pictures distributed, and the meeting adjourned.

The Annual Dinner took place in the Café Royal on the evening of Wednesday, the 15th ult., the President, Dr. Thomson, in the chair, and Dr. John Nicol (in the absence of the Vice-presidents) oroupiet. Mr. William Anderson, a member of the society, who had recently succeeded Mr. Nieve as proprietor of the hotel, served up a most capital dinner, which was done ample justice to, and the members present, of whom there were a large number, spent a very pleasant evening. After the usual loyal and patriotic toasts had been duly honoured, several connected with photography and kindred subjects were heartily responded to. The intervals were filled up with songs, recitations, and pleasant conversation, which was kept up till a late hour, when the party separated with a strong expression of opinion that such meetings might be very profitably held more than once a year.

#### WEST RIDING OF YORKSHIRE PHOTOGRAPHIC SOCIETY.

The second general meeting of the above Society was held on the 30th ult., at Leuchter's Rooms, Iregate. Bradford, Mr. J. W. Gough in the chair.

The minutes of the last meeting having been read, it was decided to hold the annual meetings of the Society in November of each year, and to constitute the existing meeting the first of the session 1874-5.

The officers were therefore re-elected as follows:—*President*—Mr. J. W. Gough. *Treasurer*—Mr. Rogerson. *Secretaries*—Messrs. Crosthwaite and Holgate. *Committee*—Messrs. Greaves, Rogerson, Sacks, and Burrow, with power to add three additional members to their number.

The meeting then devoted its attention to drawing up a code of bye-laws, which will be printed, and a copy issued to each member on his entrance.

The arrangements for the admission of new members first claimed attention, and led to a somewhat animated discussion. It was finally agreed that they be admitted by ballot, and that one black ball in five shall exclude, the ballot to take place at the meeting following that at which the member shall have been proposed.

The CHAIRMAN suggested, and it was agreed, that in the case of any member committing any immoral or illegal offence, it was desirable that there should exist in the members' hands the power to expel any such member from the Society. In order to effect this in the least objectionable manner, any member having any such complaint against any other member shall place a written statement in the question box; it shall be discussed at the next general meeting, and a majority of two-thirds shall be sufficient to expel.

The question of election of officers also gave rise to considerable expression of opinion, and after much discussion it was decided that three of the committee shall retire annually in rotation, and shall not be eligible for re-election for one year; that the President shall be elected annually, but he shall be eligible for re-election for one year, but shall not hold office for more than two years successively.

The CHAIRMAN proposed that the Society should hold an annual exhibition of photographic productions, and that prizes should be offered for competition; that a competent and acknowledged art-critic should be employed to report on the artistic qualities of the works exhibited; and a committee of gentlemen of known photographic ability should report on their merit photographically.

Mr. WORMALD (Leeds) entirely agreed with the Chairman's

remark, but considered it necessary that each exhibitor should be required to furnish a written guarantee that his exhibited work was his own *bonâ fide* production.

The CHAIRMAN considered that was a necessary requisition from each competitor.

After some further discussion it was decided to give the matter consideration at a future meeting.

The Secretary then received subscriptions from between twenty and thirty members, and over twenty new members were admitted.

Messrs. G. W. Simpson, of the NEWS, and J. Traill Taylor, of *The British Journal*, were unanimously elected honorary members; and, after a few further observations, the meeting adjourned.

The next ordinary meeting will be held on the 28th instant, at 7.30, in the same rooms, when a lantern exhibition will be given by Mr. Manley, of Brighouse, at which entertainment all gentlemen interested in photographic matters will receive a hearty welcome.

### Talk in the Studio.

KENNETT'S PELLICLE.—Mr. Kennett, referring to an answer to a correspondent in our last, mentions that the pellicle should be placed in cold water to soak, and in half-an-hour place the bottle containing it in hot water. The printed instructions are precise and detailed in their guidance.

M. LAMBERT'S MODE OF FINISHING NEGATIVES.—Mr. S. Fry informs us that he has tried the mode of finishing negatives described in our article on Lamberttype, and finds it admirable in result, and very easy in application.

THE PRICE OF ENLARGEMENTS.—A curious case was heard at the Shoreditch County Court on the 1st inst., which arose from the defendant refusing to pay a balance which the plaintiff alleged was due to him on account of work done. The plaintiff was a Mr. W. W. Roberts, of 195, Kingsland Road, and the defendant was Mr. W. Perrin, photographer, of 146, Kingsland Road. It appears from what the plaintiff stated that Mr. Perrin employed him to enlarge three pictures, for which he agreed to pay him 8s. each, and that he had paid 10s. on account. This summons was taken out for the purpose of gaining the balance of 14s. The defendant stated that on Saturday, the 26th of September, he took three small pictures to the plaintiff, and asked him, as he was very ill, if he, the plaintiff, would enlarge them, which he agreed to do for 3s. each. The defendant went over for the pictures, and put down half-a-sovereign, expecting the plaintiff to give him the 1s. change, instead of which he said defendant agreed to pay him 8s. each for the pictures and after some further dispute plaintiff said he would give a receipt, which he did by writing on a piece of paper, "Received on account, 10s." He did not hear any more from plaintiff for some time, until he sent him a bill demanding the 14s. balance, which he refused to pay. The defendant called Mr. W. Munyard, who stated that 2s. each would have been a fair price, and referred the Judge to the trade advertisements in the PHOTOGRAPHIC NEWS, to show that what he stated was correct. The Judge finished the case by deciding it in favour of the defendant.—*Hackney Press*.

FIRE IN A STUDIO IN MANCHESTER.—Some days ago a fire broke out about half-past six on the premises occupied by Mr. Baum, photographer, St. Ann's Square, after they had been closed for the night. On the arrival of the firemen and engines, under Mr. Tozer, flames were bursting out of the windows, and it was found that they had made considerable havoc on the top floor. Two jets of water were brought into play, and after an hour's work the fire was extinguished, but it was deemed necessary to leave a fireman with a hand-pump in charge of the premises for the night. In addition to the damage done in Mr. Baum's rooms, the other parts of the buildings and their contents suffered slightly from the copious deluge of water. The origin of the fire is unknown. While the brigade were engaged in St. Ann's Square, they received notice of a third fire at Messrs. Capes and Dunn's salo room, Albert Square. Mr. Tozer despatched three of his men to the place, and they found a beam on the ground floor in flames, which they soon extinguished. The cause of the fire was the beam's proximity to the fireplace.

EXCHANGE OF UMBRELLAS.—At the last meeting of the Photographic Society, an exchange of umbrellas was unintentionally made in the council room. Any gentleman whose umbrella was taken will hear of it on writing to the Editor of this Journal.



## To Correspondents.

**THE YEAR-BOOK OF PHOTOGRAPHY FOR 1875.**—We have again to thank many correspondents for valuable and interesting contributions to our forthcoming Annual. As the time has arrived when all copy *must* pass into the printer's hands in order to avoid disappointing delays, we would urge those friends who have not yet sent in their contributions, to oblige us by forwarding them at once.

**CAPTAIN STRETTON.**—An ordinary portrait lens with central stop will give you straight lines; but you must remember that a large angle always involves the use of a small stop, and consequent long exposure. To effect what you require, you must necessarily experiment to find the best compromise between length of exposure and extent of angle. You will find a decided difference between keeping the plate for a time and then exposing, and exposing first and then keeping the plate for the same time. In the latter case, you will, under ordinary circumstances, find the image on a wet plate gradually disappear during long keeping. The negatives duly arrived (one broken), and well illustrate your remarks.

**APPRECIATOR.**—The best commercial enlargements are made in various ways; but, as a rule, all the best work at the present day is by processes resembling each other. It is generally recognized now that a better result is obtained from an enlarged negative than from a developed enlargement on paper. A direct enlargement by the solar camera on paper is probably as fine as anything which can be produced; but this requires continuous strong sunlight during an hour or two, and this cannot be secured during winter in this country. Enlarged collodion prints transferred to paper are often very fine; but, whilst possessing great delicacy, they often lack vigour. A good transparency from a good negative will generally give a good enlarged negative, from which, as a rule, the best results can be produced. The enlargements issued by the Autotype Company are produced in this way, the transparency being made on carbon tissue. 2. There is no book on the subject of enlargement. 3. In developing the large plates to which we referred, M. Lambert had a quart jug full of the iron solution, and by one skillful quick turn of the wrist threw the contents so as to cover the plate at once. 4. Wooden baths or dishes for use with silver solutions, or any photographic solutions, should be first thoroughly varnished two or three times, finishing either with shellac varnish, or a mixture of collodion and linseed oil.

**H. SYMONDS.**—We do not know of any agent for Obernetter's paper in this country. We believe that Mr. Bruce obtains it direct from the maker, and you can probably do the same by writing to Herr Obernetter, photographer, Munich.

**NO NAME (Whitehaven).**—A correspondent sends us a letter referring to one of the secret processes advertised for sale, and pointing out that the alleged secret has really been published in the journals. Possibly it has more than once, as have many alleged secrets. It is also probable that such processes have been worked out, verified, or modified, and some systematic or trustworthy form given to them by the advertisers; and this is often worth something, if not worth all the amount charged. One of the most successful and skillful English photographers once wrote: "I do not believe that there is a secret in connection with photography in existence which has not been published in the News;" but, he added, it was often a secret to the reader which out of many processes to select. Thus, in reference to enlarging, enamelling, pre-lighting, keeping the bath in order, &c., probably all the information in existence is to be found in the News; but the vendors of secrets are able often to say: "Very true; but, having tried the whole, I can sell the special process which is most efficient, and save you the trouble of trying a dozen to find which is the best." At any rate, in purchasing secrets the buyer must remember the motto, *caveat emptor*. A "pig in a poke" may be worth all the money asked. The purchaser, of course, takes a risk, and if he is content to take the risk beforehand, we do not think it wise to complain afterwards.

**A RUBIE.**—Blisters in albumenized prints arise from various causes. If you have read the PHOTOGRAPHIC NEWS carefully during the past year, you will have found it the subject of frequent consideration. As a rule, the most highly albumenized papers are most subject to this defect. We can only here briefly indicate some of the causes and remedies. Floating the paper a short time on the silver bath, so that the film of albumen is not coagulated right through is a frequent cause; the use of a decidedly alkaline toning bath is an occasional cause; the transference of the print from the dense solution of hyposulphite into plain water, is a frequent cause. Floating sufficiently long on the silver bath is a remedy; immersing the print in strong alcohol is a remedy; the use of less highly albumenized paper is a remedy; the use of a neutral toning bath is a remedy; immersing the print in a solution of salt and water somewhat less dense than this hypo bath after fixing before immersing in plain water is a remedy, each of the remedies meeting some special condition. You will find some information on the subject in our forthcoming YEAR BOOK.

1874.—The "Instructions" you have purchased seem to be meagre enough; but such hints as there are seem to be pretty good. 2. There is nothing better for mounting enamelled prints than strong hot glue; but the glue must be good, used very hot, and with as little water as possible. So used it is generally very tenacious. In some cases the print is mounted on a soft thick paper, previous to mounting on the card, and this is efficient and effective. 3. We have published full details as to producing enamelled surfaces several times. The best hint we can give you, is to recommend perseverance and care. The fact that you succeed sometimes, and fail other times suggests rather that you as yet lack experience, than that your method is defective.

**S. S. YOUNG.**—There are three associations of photographers in London. The Photographic Society, often called the Parent Society, from being the earliest; the South London Photographic Society, and the Amateur Photographic Association. In the first, the subscription is a guinea annually, with a guinea entrance fee. The meetings are held monthly during eight months of the year; it publishes a journal of proceedings during those months, which members receive, and it holds exhibitions annually, to which members are admitted. The South London subscription is half a guinea annually, it also holds meetings and distributes presentation prints. The Amateur Photographic Association holds no meetings, and publishes no journals: its subscription is a guinea per annum, for which certain prints are received. You will find further details of this in the advertising pages of our YEAR-BOOK. In the two first, you must be proposed and seconded by members, before election. We shall have pleasure in aiding you when you have made your selection.

**F. H. WORSLEY BENISON.**—The papers have been forwarded. you will find the article is on his general mode of printing on collodio-chloride paper. The black tones depend on the conditions of deep toning described in our last.

**H. H. ANDREWS.**—The muffle used in enamelling is made of fire clay. It is something like a draining tile closed up at one end, and with a flat bottom. It is placed in the furnace, and admits of fire being placed all round it—top, bottom, and sides—and so forming a chamber uniformly heated. It is, of course, open in front to permit the enamel to be introduced for burning. The muffle itself is not necessarily a costly thing; but you must also have a good and suitable furnace. A strong, steady, and controllable heat is of vital importance in firing enamels. There are many difficulties to overcome, and much experience to be gained—even with good appliances—in order to produce the highest results, and we fear that little good will be effected by anything of a makeshift character.

**H. S.**—You may use a view lens for the purpose, but the exposure will be much increased. We should prefer a half or whole-plate portrait lens under the circumstances.

**A SUBSCRIBER.**—Wherever a formula instructs you to take so many parts, it leaves you at perfect liberty to interpret the word "parts" by grains, or drachms, or ounces, &c., just as you may require to make a small or a large quantity. For instance, in the formula you mention, suppose you take the parts as drachms: you will have 100 drachms or 12½ ounces of alcohol, and the same quantity of lac, and four ounces each of resin and turpentine. We may remark in passing that the proportion of lac seems to us to be very excessive. 2. It depends upon whether you use the common carbonate of soda, containing in its composition ten equivalents of water, or the purer and drier bicarbonate of soda. If you use the common commercial carbonate of soda, you may add 46 grains to each ounce of the solution. About 37 would serve, but it is better to use it a little in excess. Of the drier bicarbonate about 20 grains to each ounce.

**BRIGHTON.**—In the plan of which you send us diagram you will find it best to place the background at the south end marked D, slightly slanting towards the window.

**J. TURNLEY.**—Thanks. Washing prints in water containing earbonates or chlorides prior to toning is very apt to produce a white powder film on the surface of the print, which, if left undisturbed, is apt to interfere with toning. The tendency to this white deposit is increased by allowing the prints to rest soaking in the water. It may be prevented by using distilled water for the first washing, to remove free nitrate from the surface. Its formation may be checked by giving a hasty rinse, keeping the prints in motion instead of allowing them to remain at rest, soaking in the water. We generally consider a hasty rinse sufficient. A clean sponge is the best for removing such deposit when it is present. All the prints sent have very good qualities; they are clean, delicate, and brilliant, and without technical bluish. No. 3 is the best; but in vignette work a portion of a chair-back is better not shown. In No. 1, the points of the chair-back, appear to start from each shoulder. These minor defects are the more apparent, because the work generally is of high-class character. Your lens does not give quite sufficient depth of focus without a somewhat smaller stop. In Nos. 1 and 2 the hair rapidly runs out of focus.

Several Correspondents in our next.



## The Photographic News, December 18, 1874.

### PHOTOGRAPHY IN AND OUT OF THE STUDIO.

WHY THE SUN'S DISC APPEARS LARGER ON THE HORIZON—  
PUBLISHING PAINTINGS BY MEANS OF PHOTOGRAPHY—  
MR. THOMSON'S EASTERN PICTURES—THE SUN'S RAYS  
IN WATER.

*Why the Sun's Disc appears Larger on the Horizon.*—The Transit of Venus week reminds us of an incident relating to photo-asronomy which may be interesting to those even who do not make the heavenly bodies their especial study. "How large is the apparent size of the sun or the moon?" is a question frequently asked. Some will say that the sun is about the size of a dinner plate, and when they hold the latter in their hands by way of instituting a comparison, they find that it would have been far better to have likened it to half-a-crown. "But then, as the sun begins to set, how much larger it grows!" someone remarks; whereupon the observer in question is generally informed that while the fiery disk *appears* larger to the eye, it is not so in reality. Now it is just upon this point that we desire to make a remark, for we wish to explain why the disk of the sun appears to some extent larger when the luminary sets. It is in some measure, then, because it *is* larger, and we well recollect, on the occasion of an eclipse of the sun some years ago (in 1862, we think it was) when, after a series of views of the sun's disk had been taken during the afternoon, a final plate was afterwards secured as the big sun was verging on the horizon. And behold! when the image was developed and compared with those taken earlier in the day, the difference in diameter was most marked. The limb of the sun was scarcely so sharply defined as in the case of the photographs taken when the luminary was high in the heavens, but still the outline was as perfectly clear, and the circumference a much larger one than that of the other pictures.

*Publishing Paintings by Means of Photography.*—Unlike France, Germany, and elsewhere, we have a way of regarding photographs of paintings with anything but a favourable eye. Suspicion and distrust generally attach to the possession of such an object, and it is usually understood to be a piracy, or something of the sort, that has not been honestly come by. Indeed, the photographer is very often put down in this country as the natural enemy of painters, and we fear many of the latter, notwithstanding their occasional weak protestations to the contrary, and the aid that each and every one of them draws from our art, do not look upon the works of the camera with favour. The pictures one sees of the Paris *Salon*, and those that come to us from Germany through the medium of the Berlin Photographie Publishing Company, prove the great use which the French and Germans, on the other hand, make of the photographer's art, and what profitable business may be done by having recourse to this cheap mode of publishing artists' work. When a painting is very popular (say as in the case of Miss Thompson's "Roll Call"), it may be better, perhaps, to pay the artist a good round sum for the copyright, and have the picture engraved; but for one of this kind, there are thousands of others of first-class excellence and acknowledged beauty, of which many people would be happy to purchase copies, but for which publishers would not give twenty pounds for the right of engraving; for this latter process itself may stand them in a thousand pounds or more, and one must needs sell many copies to get back the first expenses of engraving, copyright, and cost of printing, let alone the question of profit. Such paintings as we have alluded to are, therefore, never copied or duplicated at all, and all the money coming to the artist is that paid to him for his picture in the first instance. Thus both the artist and the public are losers, for the latter would gladly purchase copies in moderation, at a remunerative price, which would probably result in a handsome fee to the artist. It

is easy to understand that a thousand copies might be sold at half-a-guinea apiece, while a market would be altogether wanting for the same or double the number of pictures at five guineas. Photography stepping in here affords a cheap method of engraving, which is so far profitable to the artist that it creates a demand for his work that did not before exist. But many people will say, Photographing a picture makes it common. This is an objection which is easily met. Photographs properly produced, on a handsome scale, and printed tastily in an appropriate pigment, would be for the most part quite as agreeable to the eye as engravings, and would be as permanent. Moreover, they would be an actual transcript of the painter's work, for the engraver, however much of an artist he himself may be, often modifies effects very materially. Again, while for an artist's reputation a picture cannot become too common, for the publisher's protection it would be as easy almost to detect copies of a photograph well executed in pigments, as those of an engraving, and the laws of copyright would be as much guarded in the one case as in the other. We cannot help thinking, therefore, that painters would do well to have their productions published by photography. The value of the original would only increase with the number of copies distributed, and many a modest picture, no doubt, would bring its author as much publishing as purchase money. In Paris, as soon as the Academy or *Salon* opens for the season, photographs are prepared of many of the pictures, and these copies are on sale in the Paris print shops and elsewhere, and realize large sums of money in their disposal. Some of the pictures are of very fleeting interest, and would certainly never pay a publisher to engrave, but they bring their authors notable sums in Royalties by being skilfully photographed. How long it will be before we in this country follow suit remains to be seen; but we think the action must come from the artists themselves, for at present publishers in this country do not sufficiently understand photography and its capabilities, and, consequently, are very unwilling to have much to do with it.

*Mr. Thomson's Eastern Pictures.*—We are glad to see that Mr. J. Thomson's "Book on the Straits of Malacca and China" has at last been published. Mr. Thomson's photographic work attracted so much attention by reason of its boldness and grand proportions, at one of the recent exhibitions of the Photographic Society, that it is gratifying to know that the sketches have been made good use of in the book we mention. In a book of travels where peculiar customs and people are described, there is nothing so welcome as well-executed pictures to illustrate the text. As Mr. Thomson took his camera with him wherever he went, and as he passed through some of the most untravelled portions of the East, the pictures he has brought home are exceedingly valuable and interesting. A series of pictures such as he has collected during his ten years' absence from England gives most people a better idea of Eastern life and scenery than they could otherwise obtain short of going abroad. The illustrations in the book have been carefully engraved from the photographs of Mr. Thomson, and the sketches have been most satisfactorily treated. A literary contemporary praises some of them very highly. "We often hear," it says, "of the Chinese coolie, when emigration questions are discussed. Turn to page 14 of this book, and we discover the very man. There sits the patient coolie at his mid day repast, undisturbedly shovelling vermicelli with chopsticks into his mouth. So, too, we are introduced to Buddhist priests, glaring Canton shops, the deck of a junk as she gets under way, and many other Oriental scenes and characters, set before us with an accuracy that cannot err."

*The Sun's Rays in Water.*—A curious experiment has recently been made to ascertain how far the chemical rays of the sun can penetrate water. The research was conducted upon the Lake of Geneva, whose waters are among the clearest of the Swiss lakes, and the result has recently



been communicated to the Society of Natural Sciences in the Canton of Vaud by M. Forel. He found that the chemical action of the sun's rays was felt in the summer time at a depth of between forty and fifty metres. We are not aware of the nature of the sensitive compound employed by Mr. Forel in these experiments, but we hope shortly to learn more of the details.

### PHOTOGRAPHIC EXPERIENCES IN NEW ZEALAND.

BY D. L. MUNDY.\*

THE album of fifty views and the eight framed pictures, illustrative of the geographical, floral, and economic features of New Zealand, which I had the pleasure of showing at the recent Exhibition, form part of a larger series of about 250 plates taken by the wet process under difficulties of travel and climate, and not without some personal risk. They represent the work of four years, directed by the experience of a much longer residence in the colony, which is necessary in order to know how to travel this wild and mountainous country, as it is only at certain periods of the year one can venture on such journeys—for instance, crossing the New-Zealand Alps from the east to the west coast in the South Island; and, to show the difficulties I had to meet, I may mention that I was ten days camping on the banks of the Otiā river, during a heavy fall of snow, hail, and sleet, before I dare attempt to cross; it was so flooded with ice-cold water coming down from the Alps. I frequently had to ford one river many times, on one occasion no less than twenty-three times; sometimes we had to drive the horses into the rivers and swim them over, heading them to the most convenient landing, and then had to ride many miles wet to the skin before finding a convenient place for camping down for the night. At other times I had to depend on my gun for food; and on several occasions I was nearly eaten up by mosquitos and sand-flies. The views were mostly taken by camping out with one or, occasionally, two companions, and moving from place to place, occasionally by coasting-steamers or small cutters and schooners when visiting many of the out-of-the-way places on different parts of the coast; while my journeys inland were made with a couple of pack-horses to carry the baggage (photographic and otherwise), following beaten paths whenever I could find them, but at other times taking my way through Maori tracks, fords, and bush, crossing dangerous rivers and swamps, with native guides or mounted escort, when I was travelling into the interior of the North Island, furnished with credentials (written both in Maori and English) kindly given me by the Hon. Donald McLean, native Minister, as at that time, when at Lake Taupo, I was not safe from the rebel chief 'Tī Kooti, for whose head there was a reward of £5,000.

Some of the plates have historical value, as:—Poverty Bay, the first point seen by, and first landing place of, Captain Cook in 1769; Mercury Bay, where he observed the transit of Mercury, first found fresh water, unfurled the British colours, and claimed New Zealand in the name of King George the Third; Bishop Selwyn's first settlement (Waimate), Bay of Islands; Akaroa and Banks' peninsula on the east coast, where the British flag was first planted; in the Middle Island, Maori relics of various kinds; the scenes of the wars; and the festivities connected with the visit of H.R.H. the Duke of Edinburgh, in 1869. Other illustrations portray the machinery and huts of the gold diggers, the making of flax-rope, hauling kauri timber out of the bush, and shipping the same, road-making, and other industrial operations.

Natural history is represented by the *Apteryx* (or Kiwi) of the natives, the wingless bird of New Zealand) and the *Dinornis* or Great Moa skeletons in the Canterbury Museum, by rock sections, &c.; and Plate 58 represents an immense boulder of conglomerate, 41 feet in circumference and per-

fectly spherical, which is now lying on the beach at Hokianga, near the residence of Judge Maning (the author of "Old New Zealand, and the Pakcha Maori"), with whom I spent several very pleasant weeks. This remarkable geological phenomenon, if of glacial origin as is surmised, occurs now in the hottest part of the islands, namely the upper extremity of the North Island. Such boulders are to be found of every size, from the ounce hullet upwards; the small ones were used by the natives in their tribal wars for loading their guns. The tropical plants, Nekau palms, great fern trees, black and white pines, *Phormium tenax* (New Zealand flax), and the flora generally are shown in a variety of scenes and combined with every variety of landscape, their forms being accurately delineated, whilst one feels the more regret in being obliged to add that the magnificent colouring of the valleys and mountains cannot yet be reproduced by the help of photography.

A few native groups and Maori settlements, with figures and costumes, come within the branch of ethnology, the grand geographical and geological features of the country being dealt with in a special series of photographs, twenty-four in number, representing the hoiling geyser system of Roto Mahana and Lake Taupo, which extends for about 160 miles inland, near the centre of the North Island. Another series of 60 plates shows the fine range of mountains forming the backbone of the South Island, and known as the New-Zealand Alps. Mount Cook, the highest point in this chain, has an altitude of 13,200 feet (nearly as high as Mont Blanc). Arthur's Pass 5,000, and the Rolleston glacier being about 8,000 feet above the sea. When I crossed these mountains in February, 1858, I travelled a distance of nearly 200 miles from Christchurch, in Canterbury, on the east coast, to Hokitika, in Westland, on the west coast, and the same on my return journey; the snow-capped peaks and the gorgeous foliage of the virgin forests, showing the beautiful rata trees in their intense foliage one mass of crimson, growing up close to the very ice, are admitted by all travellers to be of surpassing beauty; these were seen to the greatest possible advantage, this being about the height of the New Zealand or antipodean summer.

My usual plan of proceeding was to erect an ordinary digger's tent, supported upon a couple of forked poles and well fastened down with guy-ropes; then from the ridge of the structure, suspending a square photographic tent made of buckintosh material, with black calico skirts resting on the ground and kept securely fixed with stones. In fine weather this supplementary operating tent was erected outside the ordinary dwelling; but at other times better protection was afforded by suspending it within the larger tent. A square window of yellow oiled silk, measuring about 18 inches in both dimensions, admitted enough light to work by, and was of course proof against fracture during my journeys. A pack-horse carried a couple of strong leather trunks slung from the saddle, in one of which the chemicals were packed, while the apparatus was placed in the other. The camera-legs, folded tent, and stereo-camera were carried aloft on the back of the animal, between the panniers, and the second horse had enough to carry in the shape of the ordinary impedimenta of a traveller. When disposed for work the two boxes were placed within the tent unpacked, and the dipping bath filled from the contents of two or three Holland's bottles holding the silver solution, secured until now by corks protected with india-rubber finger stalls. The top of each bottle was carefully tied over with a piece of cloth. I have never used stoppered bottles, preferring to carry collodion and solutions packed in this manner. I learnt this from a sad mishap I once had, when I lost nearly everything through using stoppered bottles. One of the empty trunks was used to support the dipping-bath and screen it from the light and dust whilst sensitizing, and the other formed a convenient table with a primitive stool in front, consisting of a wooden board 12 inches long by 4 inches wide supported upon a single leg. My developing dish was a square tin tray 6 inches deep, and measuring about 20 by 16 inches.

\* Read before the Photographic Society of London.



Besides the stereoscopic I carried a 12 by 10 Kinnear bellows camera. The optical instruments consisted of Ross's triplet for distant views (some of my Alpine views were taken by this lens; No. 167 shows the Alps forty miles away up the river-beds), while I used Dallmeyer's wide-angle rectilinear lens for closer studies. Some idea of the range and performance of the last-named instrument can be judged from Plates 117 and 133, where a palm tree 30 or, at most, 40 feet from the camera is seen with satisfactory definition, the distant ranges, four miles away, being likewise sharply focused. With a  $\frac{1}{4}$ -inch stop eight seconds was the ordinary exposure, and I never, as a rule, exceeded twelve seconds.

I may mention that it was found necessary in a dry climate to pass a moistened sponge once round the inside of the camera, and then to wash out the dark slide, so as to guard against the too rapid drying of the plate, and that thirty-five minutes was the longest interval that was allowed to elapse between the preparation and development of the negative. Three or four folds of moistened red blotting-paper applied to the back of the sensitized plate likewise assisted in preserving a moist film; to keep out light and dust the carrier was always enveloped in a black velvet bag. I should mention also that a very convenient dipper was made for me in the colony out of a flattened ribbon of pure silver, made in the usual form of the wire dippers, but with strengthening bands placed at intervals to give greater rigidity. Out of seventy plates exposed during one of my tours, it was only necessary in four instances to repeat the operation on account of misjudging the time, and the same number of negatives (four) were lost by fracture during transit. For developer I commonly used a 30-grain solution of the double sulphate of iron and ammonium, containing in addition half its weight of sugar, and intensified, when necessary, with pyrogallie acid and silver. All the plates were fixed with a dilute solution of cyanide of potassium, and then washed with water from a tin kettle holding about a gallon, which served me besides for making the tea and other culinary purposes. The collodion and varnishes were supplied to me by a well-known maker, and I had never any trouble with them. The glass baths furnished in my original outfit unfortunately got broken; and this mishap occasioned a delay of three months whilst another dipping-bath, made of porcelain, was being forwarded from Sydney. This I found far preferable; there was less danger of breakage, and I could always have a clean bath by changing the bottles holding the bath solutions.

Under favourable circumstances my kit was unpacked, mounted for use, and the 12 by 10 plates, besides the stereo-negatives, taken in the space of three-quarters of an hour. This was when not camping down to stay. I had simply to choose a sheltered place from the wind and sun, make my tent fast under the limb of a tree, and commence operations. All the boxes were fitted with divisions, so that everything could be replaced for resuming the journey in the shortest possible interval.

The supply of water was at times one of my greatest difficulties; for when near the boiling springs I found everything so charged with sulphur and mineral matters that it frequently became necessary to send a distance of two miles or more to obtain a sample sufficiently pure. The natives generally knew where to find it, but it was so thick from being ladled up with a calabash, that I had to allow it to settle before using it; the springs also were often far away from my scene of operations, and fetching the water was sometimes a very vexatious undertaking, much more so than the cooking of food, which in this district was almost an automatic proceeding. During my stay of eight days at Roto Mahana all our food (consisting of hams, fowls, eggs, potatoes, &c.) was cooked either in the boiling holes or by making a hole in the ground in places, when steam would immediately rush forth; by placing our food in a Maori kit or basket over the hole and covering it with fern, it was very soon cooked; in fact, all through the country, up to

the head of Lake Taupo, for over a hundred miles, the natives cook their food in this way. In the foreground of Plate 86 will be seen the hole which served me instead of a kitchen fire, and close by are some native women watching their own cooking operations. On the hill-side, to the right of the picture, was H.R.II. the Duke of Edinburgh's camping-ground when visiting the hot lakes. Plates 79 and 80 will help to explain the active nature of the geysers, from one of which the boiling water rises in a six-foot column to the height of about forty feet, at intervals, which I counted when on the spot as recurring every eleven seconds. I was informed that sometimes it reaches to the height of 100 feet or more. The depth of the principal crater is unfathomed; and I am told that the bottom has never been sounded. All the food for several hundred troops was cooked in this geyser, when they were fighting Ti Kooti in the neighbourhood. It is very dangerous to go too near it. This boiling-geyser system at Tokanu is at the head of Lake Taupo, the lake to which I am now referring; it is 1,250 feet above the sea level, and overflows into the Waikato river. At Roto Mahana, or Hot Lake, is a series of chalcedony terraces, of marvellous pink and white colour; the water running over these terraces continually overflows from the crater. At the top the temperature is 212° F.; it fills the different basins, and forms the convenient hot baths in which the natives frequently indulge, and in which they sit in groups for hours together, smoking their pipes. I have bathed in most of these throughout the whole country, and, like the natives, never felt inclined to leave my bath, they are so truly luxurious; the different salts in the water make the skin peculiarly soft; they are a sure cure for rheumatism, but are very relaxing if you stay in too long. Throughout the whole district, from Lake Taupo, going north, to the coast on the banks of the rivers, the temperature can be so modified, by diverting the flow of hot water (by stopping up with a clod of peat), that a bath can be had of any desired temperature. Plates 86 and 94 show some natives enjoying a natural tepid bath. This fact, taken in connection with the magnificent climate of New Zealand, may some day be extensively utilized for curative purposes. At present there is no difficulty in the way, inasmuch as the hostile chief Ti Kooti is no longer a terror, he being safe in his hiding-place in the Waikato country. Good roads have since been formed, and a coach is now running from Auckland through the hot-lake country to Lake Taupo and Napier on the east coast. Military roads are also being opened up all over the country, and redoubts being built at intervals by the armed constabulary for the protection of the settlers and travellers.

## THE PRACTICAL PRINTER IN AMERICA.

### XVI.

#### FANCY PRINTING.

*Fancy Medallion and Arch-top Printing.*—This fancy printing is sometimes very beautiful when the designs for making them are neat and pretty. In selecting designs for this work, be guided by good taste, and do not strive after complicated and glaring designs when the simple and delicate ones are always the object of the tasteful printer.

There are very few designs for this fancy printing more beautiful than that of the fine parallel lines that we are so familiar with in the French writing-paper. Besides the parallel lines, a few others of a delicate design are used very appropriately. Always have the size of the intended prints and the fancy design in harmony with each other; i. e., the larger the size of the print the larger should the design be, and *vice versa*. It would be ridiculous to have large designs intended for an 8 by 10 size photograph used on the common card, as well as it would be to have small designs on large prints.

I have seen a few frame photographs printed in the fancy arch-top and medallion style that I liked very much,



because the design for this fancy work was so very appropriate for the size of the print.

Generally speaking, however, these designs are intended simply for the *carte-de-visite* and the Imperial; sometimes, too, for the Victoria when that style print is made, but they are very seldom used for anything larger.

The making and use of these medallions and arch-tops intended for this style of printing are exactly the same as was described in the preceding chapter, with the exception of the placing of the paper, with the design upon it, upon the print, and then shading the line upon the print by means of the inside mask, as usual. There is also another way, which will be described further on.

The paper suitable for this work is known as the French writing-paper, the thinnest of which should be obtained. A sheet of two or three different kinds will answer very well for a beginning.

Cut the sheets up to the proper size, and after placing your print upon a flat printing-board, put one of these different kinds of designed paper over the whole print, which will be almost entirely covered. Now take the proper mask and proceed to make the crescent line on the print. This is rather difficult at first, owing to the very indistinct print under the white writing-paper, which thus renders the shading of the line rather troublesome. By pressing the white paper in close contact with the print underneath in laying on the mask, and going to a part of your printing-room where you can plainly see your work, you will find that you will have no trouble whatever.

In printing this outside let it darken to the same shade as you would in making plain medallions and arch-top prints; and what I said in regard to plain medallion-printing, about tinting the border to the same shade as the background of the print, is also applicable in this style of printing, the result being equally as bad, with the exception, perhaps, in this case, that there will be a kind of a fancy flatness to the prints, instead of a plain one.

Besides the above, there is also another way to print these, which is, perhaps, easier, because the French paper can be dispensed with, as the glass to which the mask is struck answers the place of the paper. A very thin negative indeed is made of (say) some moss, and developed, fixed, washed, and varnished as is usual in negative making.

The masks are attached to the face of the negative, but it would be better if they were not struck at all, for the negative will, in a short time, be ruined by so doing, and after adjusting the mask the whole is then placed out to print as in ordinary plain medallion-printing. The negative being very thin, the border will darken very rapidly, as quick, if not quicker, than when French paper is used.

*Printing in Gray.*—This term is generally applied to photographs which have been, or are to be, printed first in the vignette style, and then the surrounding white border has been, or is to be, printed or tinted a little. The whole appearance of the mounted print is very often quite pleasing, the darker draperies, &c., of the print being of a rich warm tone, while the slightly tinted border will be of a "gray"-ish tone. When skilfully done, this "printing in gray" is a good thing, and serves to give variety to the printer's results, instead of the monotonous appearance they have in some galleries.

In the first place, in the vignetting of the negatives that are to be printed in this style, do not show too far down in the draperies, although considerable halo may be shown around the head.

The reason why the draperies should not be printed too far down is, because in tinting the border the action of the light on the white sensitive paper *develops the print* in a measure where, in the first place, nothing of the draperies were visible. Bear this in mind.

While the tinting of the border of the vignette print is carried on, the lights of the print would be very much

discoloured if they were not protected from the white light, and consequently a cut-out or mask is made, which answers the purpose admirably. To make this mask, cut a piece of spoiled sensitive paper a *very little* smaller than the figure, as regards the hair, dark draperies, &c., but not a particle smaller in regard to the face. Do not cut too far down in the draperies, or in tinting the print will be spoiled.

The print to be tinted, having been removed from the vignette-board, is then placed in a flat printing-frame, in which a clean glass has been previously placed. Another glass of a larger size is then obtained, to the under surface of which is attached this cut-out, and then, placing the glass so that the cut-out on it will cover the figure in the print, we commence to tint the border of the print, keeping in the meantime the glass constantly on the move. It will take about five to ten seconds to tint all that is required.

In moving the cut-out during tinting of the border, be sure that no part of the face is so exposed to the light as to discolour it.

Always be careful not to tint the border so much as to occasion flatness. A very little tinting is all that is required.

Cotton is generally used by experienced printers in place of cut-outs, but I should not advise the beginner to attempt it until he has had several months' experience in printing.

## THE LIGHT AND THE SUBJECT.

BY R. J. CHUTE.\*

DIFFERENT subjects require a different light. This is well understood by all experienced posers; but there are many who are enquiring whose experience has been limited, and whose minds are open for the reception of such additional light and knowledge as may help them up in the way of improvement towards the goal of excellence. There are certain standard rules or conditions which are to be observed with a subject possessing fair and favourable qualities—that is, regular features, rather fair complexion, and steady nerves. With this class of subjects, we say, light at an angle of forty-five degrees, quite subdued, with about such appearance of light and shade on the face as is desired in the finished picture. From this as a standard there will be encountered a great variety of exceptions. In one direction they run down, through the tender grades of youth, to the soul-harrowing baby that must be caught almost as a bird on the wing; in the other it goes up into the stern and swarthy hues of muscular manhood, and on, through the period of silvery locks and declining years, down to the other end of the scale, where we must deal with trembling, tottering old age.

The fair complexions of children make them favourable subjects for photography, and the difficulty, sometimes, of keeping them still is offset by the advantage of rapid execution. To gain this rapidity, however, usually requires a different arrangement of light, or, in other words, no arrangement at all, for the best method is to use all there is to be had. An impression may be secured in such a light with a very near approach to an instantaneous exposure. With light drapery—which, only, is appropriate for children, and which the photographer should always insist upon—the subject itself becomes a source of light, so that even dark objects surrounding become sufficiently illuminated for very rapid work. From this it will be seen that but little effort or skill is to be exercised in the lighting for very young children, the main thing being to manage them so as to secure an impression with all the light than can be brought to bear. This usually calls for all the resources a man is possessed of.

Proceeding from our standard in the other direction, we soon find exercise for all the talent we may possess in



adapting the light to the various subjects that come before us. The first may be one of the lords of creation, who ordinarily might be an excellent subject; but having just returned from his summer vacation, where he has promised his picture to an indefinite number of friends with whom boating, fishing, and hunting, he has become as brown as a piece of bronze statuary, and presents a face almost as difficult to photograph. In country places these subjects are common the year round. To light such a face, the main point is to avoid shadows. The softest light possible must be had, and then the shadows will be strong enough. The resulting picture bears little comparison to the actual light seen on the face; both light and shadows are exaggerated, and violent contrasts intrude themselves, unless great care is taken to get a subdued light, and give a liberal exposure.

The subject with thin features, sunken cheeks and eyes, requires to be set well back from under the light, using a low frontlight as much as possible. A top-light gives the shadows too strong under the brows and on the cheeks, while a side-light makes too much contrast between the two sides of the face, one being strongly illuminated, and the other in deep shadow. Subjects with coarse heavy features, and those wrinkled with age, require similar treatment.

Those with grey or white hair are often excellent subjects, but a diffused light is necessary to avoid rendering the hair an indefinite blotch where the strongest light falls. With many of these subjects something of the Rembrandt style of lighting is very effective. The hair is kept mostly in shadow, and all its detail is given with the utmost fidelity.

As we approach the second childhood of our subjects, the feeble, unsteady nerves often compel a resort to much the same practice that we use in the case of little ones—plenty of light and short exposure.

It is not only the difference in the subject that requires a modification of the light to suit the occasion, but it is the difference in the size of the picture. A light that would be suitable for a small picture, such as a card or cabinet, would not do for one of imperial or half-life size. The larger the picture the less contrast must there be in light and shadow. The theory of this is obvious if we consider that the amount of light received in the middle-tints or half-shadows on the face is concentrated into a very small space in the card photograph (we will say the half of a square inch), and acquires considerable vigour; but when the same amount of light is to be distributed over three or four square inches of surface, as in the half-life size, it becomes too feeble to be sufficiently assisted by any additional length of exposure that may be given. The only remedy, therefore, is additional light in the shadows, or, in other words, but little contrast in light and shade.

### Recent Patents.

#### SECURING GRAIN OR TEXTURE IN PHOTOGRAPHS.

BY HENRY BARRAUD.

ANOTHER attempt to protect methods of securing a stippled texture in photographs, which, being found not new, was abandoned.

"My invention relates to a means of improving the artistic effect of photographic pictures produced by light printing from negatives, and consists in the application thereto of a lined, dotted, stippled, or otherwise varied ground in the manner hereafter described, by which some of the effects of a line or stippled engraving may be imparted to the picture. According to my invention, I obtain upon the sensitized or other surface on which the picture is to be produced an impression from one or more plates, stones, or other suitable printing surfaces upon which lined, dotted, stippled, or otherwise varied designs have been engraved, drawn, or otherwise produced. The character of the ground thus obtained, and the colour of the ink or pigment in which it is printed, may be varied to suit the subject of the picture or of the different parts of the picture to be produced. Instead of applying the said ground to the surface before the photograph is printed, it may be applied after the picture is fixed, either by

printing, as before, from a plate, stone, or other surface, or by transferring (from a sheet of paper or other material upon which the said ground has been printed) an impression thereof to such parts of the picture as may require it."

#### PRINTING WITH OXALATE OF IRON AND GOLD, ETC.

BY W. WILLIS, JUNIOR.

THE following specification describes a series of processes of obtaining sensitive surfaces for printing with oxalate of iron in conjunction with the noble metals, such as gold, platinum, iridium, &c. :—

"This invention has for its object improvements in the chemical treatment of the surfaces of paper, wood, and other suitable materials employed for receiving images from photographic negatives, or from any other object that may be interposed between the light and such prepared paper or other surface. For this purpose, according to my invention, I apply to surfaces of paper, wood, and other suitable materials (by either one or more coatings) solutions or coatings of simple or compound salts of platinum, iridium, or gold, or a mixture of such salts. After this has dried I sometimes apply another coating of a salt or salts of other metals. I then coat the material again using a solution of ferric oxalate, or tartrate, or a combination of these salts with others, and again dry. I then expose the coated surface to light under a photographic negative or other suitable object till a faint brown image appears; after this I apply to the coated surface a solution of the neutral oxalate of potassium or other suitable oxalate, which speedily changes the brown tints to black ones. I then wash the surface thus treated for a short time in a dilute acid, and finally wash in water; but I sometimes immerse the surface in a solution of chloride of sodium, or hyposulphite of sodium, or other suitable salt, before giving it the final wash in water.

"The following are several examples of the operations and manner in which I employ some of the chemicals above referred to in carrying my invention into practice.

"First method.—I coat paper with a solution of chloro-platinite of potassium, containing ten grains of the salt to one ounce of water. After drying the paper, I coat it again with a solution of the nitrate of lead, forty grains of the salt to one ounce of water, and dry it again. I then coat it a third time with a solution composed of ferric oxalate, sixty grains to one ounce of water, with as little oxalic acid as is sufficient to render the fabric oxalate soluble. I then dry the paper and expose it to light under a negative. On removing it from the negative I float it face downwards on a hot solution of potassic oxalate. I then wash it in a weak solution of oxalic acid, then in plain water, and finish by immersing it in a solution of hyposulphite of soda followed by a slight wash in plain water.

"Second method.—In this method I proceed as in the first, but substitute an eight-grain solution of nitrate of silver for the nitrate of lead, and after removing the prints from the weak solution of oxalic acid I finish them by an immersion in either a strong solution of chloride of sodium, or in a weak solution of that salt, followed by a weak solution of ammonia, supplemented in both cases by a slight wash in plain water.

"Third method.—I coat paper with a solution of platinum bromide, twelve grains to one ounce of water, and dry. I then coat it with a strong solution of ferric tartrate, and dry. I next expose this paper to light under a negative, and afterwards float it face downwards on a hot solution of potassic oxalate. I then immerse it in a weak solution of oxalic acid, and finish by washing it in plain water.

"I occasionally vary the preceding operations, or invert their order, or omit one or more of them.

"I would remark that I do not intend to confine myself to the use of aqueous solutions of the chemicals here before referred to, as the salts may be dissolved and used with any suitable solvents.

"I sometimes mix two or more of the salts used for coating the paper or other surface before application.

"Having thus fully described the nature of my improvements, and the manner of carrying the same into practice, what I claim for the production (on suitable surfaces) of photographic pictures in platinum, iridium, and other metals is, the application of solutions of potassic, ammoniac, or other suitable oxalate to such surfaces after they have been exposed to light under a negative or other suitable object, and which surfaces have been coated previous to such insolation with ferric and with other salts, substantially in the manner hereinbefore described."



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## TRANSIT OF VENUS.

FURTHER telegraphic reports from other observing parties report further success. Professor Harkness, in charge of the American expedition at Hobart Town, states that their observations were particularly successful one, and thirteen photographs having been obtained during the passage over the sun's disc. Professor Newcombe, of the Naval Observatory at Washington, remarks that the eighty photographs obtained at Nagasaki and Wladivostock, combined with those taken at Hobart Town, will suffice to give value of solar parallax, with probable error of perhaps 1-40th of a second of arc. Various other successful observations are reported.

The value of the photographs received promises to be very great, and a scientific writer in the *Daily News* remarks that it is possible that photographic observation will quite replace ordinary telescopic observation at the next transit in 1882. The "black drop" and "ligament" apparent in the merely optical observations are reported by Captain Abney to be absent in his photographs produced at Thebes.

The *Times* says:—"With regard to Captain Abney's statement that 'no black drop was apparent in photographs after careful examination,' it is clear that the Astronomer-Royal is of opinion that both black drop and ligament are subjective phenomena, for he remarked that 'photographs were things which had no nerves,' and that, therefore, they put out of the question the possibility of nervous influence. This conclusion we ourselves hinted at when referring to Janssen's observations at Nagasaki. Janssen's Daguerreotypes are regarded by the Astronomer-Royal as beyond comparison superior and more accurate than photographs on glass."

## PHOTOGRAPHY AND CHEMISTRY.

EVERY practical photographer is something of a chemist, although his knowledge of the science is often a very limited one; for it is impossible for any one who has for years constantly practised the art of photography, making up baths, developing solutions, and fixing toning liquids, not to learn something of the nature and reactions of the bodies he handles. For all this, many a modest operator would, we dare say, be as startled at being told he was practising chemistry when testing waste solutions for gold or silver, as Moliere's *bourgeois gentilhomme* when informed he had been speaking prose all his life. Unfortunately,

most photographers do not acquire their chemical knowledge in the best and most straightforward manner, preferring to learn by the practical experience of several years what they might have readily known by a brief study of photographic chemistry. There are those, indeed, who pooh pooh as altogether unnecessary any knowledge of the kind, and boast that they can take bright and clear negatives and brilliant prints without such wisdom, forgetting all the time that, though they themselves may be unaware of the fact, they have come to know intuitively many things of importance, the value of which they estimate but too lightly. They are surprised to learn that what they regard as a matter of course are things of which beginners know nothing whatever, and that they have, in fact, acquired a knowledge—a slight one, no doubt—of the science of chemistry without their knowing it. The definition of science in their minds would be something you don't understand; as soon as you do, it ceases to be a science.

As we have said, to be a good photographer, it is impossible to be altogether ignorant of chemistry, and photographers now-a-days would have far less difficulty with their work if they only knew a little more of the science. There is no reason why every disciple of the camera (no matter how humble) should not be acquainted with the elements of chemistry. His own work has taught him to be careful in his manipulation, and to conduct all his operations with the utmost cleanliness, and these are essential qualities in the performance of all chemical examinations. He may begin very modestly, and need be under no fear of having to read through such bulky volumes as Watt's Dictionary or Gmelin's Chemistry before he can get to work. His aim is not to become a skilful analyst. He only wishes to become acquainted with a few simple reactions; and if he fits up a corner of the bench in his workroom with half a dozen test tubes, a few beakers, a wash-bottle, and a spirit-lamp, he will find that very much may be done with such modest apparatus. A copy of Hardwich's Photographic Chemistry, or some other simple manual, will prove a sufficient textbook; and he can study by degrees, and do a little experimentalizing during his leisure moments.

We are far from supposing even that a photographer would be able under these circumstances to help himself out of every difficulty, but in many of his manipulations a slight knowledge of chemistry would be invaluable. We knew a photographer some time ago who resided near the Essex Marshes, and who was troubled continually with his negatives, the films of which frequently became disintegrated, and left the glass. His practice was to rinse first with distilled water and then with water from a well in his garden, and the defects turned out to be simply due to the large quantity of salt the latter contained; a circumstance he might easily have discovered for himself by adding a drop of nitrate of silver solution to some of the water contained in a test tube. Again, how many correspondents write to us about stains and spots in prints, of the nature of which they are ignorant. Of course, in most instances they turn out to be due to the presence of hyposulphite of soda, and the testing of this by means of iodide of starch is one of the simplest chemical operations, if only undertaken with care and accuracy. The estimation of residues, the testing of photographic requisites for purity, may all be undertaken by a photographer possessing but a slight knowledge of chemistry, and the same may be said of the preparation of many of the compounds that he employs.

But a photographer conversant with chemistry is able to do more than this. He knows the action of the various constituents in his baths and solutions, and the reasons why they work wrong or right. He can turn his waste solutions and residues to the best advantage, and if he cannot dispose of them profitably, can make very good use of them himself. To work successfully and economi-



cally, chemical knowledge is indispensable, just as much as an acquaintance with art is imperative in the taking of good pictures; and we shall hail the day when a course of elementary chemistry will be considered a *sine qua non* for all pupils in photography.

#### PHOTOGRAPHERS AND THE PUBLIC.\*

It is no easy matter to write upon the business relations of the public and the photographer when there is so much difference in photographers, and in the public too. What is good for one is not so for another, and what is in keeping with the public of great cities does not suit that of the provinces. Upon one point only is the public generally the same, and that is in its ignorance of what takes place when it is photographed. Many believe that with the uncapping and capping of the lens everything is finished, and these people cannot for the life of them understand why such high prices should be demanded for such simple work. Others know a little more: they have heard of plates, and have even smelt collodion.

Some time ago I was travelling about, and arrived at an hotel after I had been at work the whole day in a tent in some out-of-the-way district. While taking my supper in the coffee room, I heard several gentlemen near at hand evidently chatting about me, and discussing what I might be (for I should mention, by the way, that I had no outward signs about me, such as blackened fingers and the like). Presently one of them passed close by me who was possessed of a very fine sense of smell, and he sniffed about as he crossed the room, and whispered to the others, "He is a photographer—he smells of Hoffman's drops." The man was quite right; my clothes did smell of Hoffman's drops, or rather of ether, which is common to that patent medicine and collodion.

It would be better, however, if the public knew less about the technical, and more of the artistic, requirements of our art. The man who knows that I use collodion is of little assistance to me when I take his portrait; but he who is aware that to produce a happy portrait a tasteful arrangement of the dress is necessary would have no objection to place himself in the hands of the photographer, and would not talk of matters which are simply impossible. I remember the case of a young lady who was just engaged, and who desired to possess a picture of herself dressed in the garment in which she had first appeared before her intended husband, with her hair arranged in a certain fashion, and dressed with some white flowers at the back, which she desired should be visible.

"I can only take you in profile under those circumstances," I said.

"Oh, pray don't do that," was her reply; "I never take well in a profile position. I must have a full face portrait."

I explained that the flowers in her hair would not then be visible, and suggested as a compromise that they should be placed more to the front. But to this she would not consent, and prepared to take her leave forthwith; so I suggested to her that the only way of overcoming the difficulty would be to have a bust of herself wrought in marble.

Some time afterwards I had to do with an amiable lady, who was something of a blue-stocking, and who was very proud of her somewhat sparse, though genuine, locks. This lady, also, wanted a full face portrait, and yet was exceedingly anxious to show her back hair. I helped myself out of the difficulty by employing a mirror set up in the rear, which gave a picture of the hair behind. It was a little unsharp in the negative, but that did not much matter; I retouched a little, and put in a few extra locks. The result was highly approved, and paid for, although, I must admit, the head-dress did not look very natural, after all.

The dodge with the mirror is not, of course, a new one. Those who make use of it will, however, find that it is by no means an easy matter to obtain the model and the reflection in the looking glass, both sharp, at the same time. It is an error to suppose that the mirrored image lies upon the surface of the mirror. I know a secret-process man, who sells, among other things, a method of photographing an interior with a portrait, without a diaphragm, and yet producing everything very sharply; and his instructions are to photograph everything reflected in a looking-glass. Those who try the experiment will find that, in focussing, the reflected image is quite as difficult to render sharply as the direct image. "The picture lies just as far behind the mirror as the object is before it," says Professor Pisko in his work upon Light and Colour, a book from which photographers may learn a great deal. The nearer, therefore, the mirror is approached to the model, the easier will be the operation of focussing.

I may here remark that the taking of portraits in the presence of a looking-glass is a task in which the most practised photographers do not always succeed: there is to be seen in the shop windows the picture of a princess—a three-quarter portrait, with a mirror. You can see from the picture that the photographer has essayed to show the royal model in profile in the looking-glass, while she herself is depicted full face. The mirrored image was not, however, successful, and to cover the defect it has been tinted in the sunlight. Fortunately the public is unaware of the failure, for it generally sees mistakes enough where the photographer is unaware of their existence, and often refuses pictures which really are very fair productions.

Frequently the public, in pronouncing against a picture, will not specify the particular point they find fault with—when, for instance, it is one for which they themselves are alone responsible. Thus a lady who is in the habit of biting her lips will have nothing to do with a picture in which this is shown; she does not, however, tell you her reason for disliking the picture, for she knows very well that the fault has happened from no fault of the photographer; and it is not often, therefore, that the latter gets to know the real cause of dislike, for the model advances other reasons for her rejection of the picture.

The best way of overcoming such difficulties as these with the public is to make prepayment obligatory. I travel about a good deal, and as I like to look at the different studios I come across, I get my portrait taken *incognito* by my colleagues, paying, of course, for the service, and hearing and seeing what I can. I never grudge the money, for I always learn a good deal; and I have found lately that the custom of prepayment is becoming every year more general. Half the amount of the fee is taken in advance. Whether this rule works as well in the provinces as in the capital I must, of course, leave to my colleagues to decide. A great point is the proper management of one's customers, and some conversational powers and worldly experience are necessary for the purpose. The photographer who has these qualities will be able to control the sitter and have his own way much more than a shy, nervous, and inexperienced operator, who becomes exceedingly embarrassed when he has to do with a person of high rank or noble position. As I am not only a photographer, but have frequently been a model myself in many studios, I have been able to acquire many interesting experiences on this head. While one photographer will allow the model to sit down as he likes, will make but few remarks, and very slight modification in the pose, and in a few seconds has done his work, another pulls and tugs at every corner and fold in one's garments, pushes your head this way and that, now full face, now profile, takes a quarter of an hour to arrange you, and, at the last moment, takes quite another view of things, exposes a plate, and then begs for a second sitting, as the first has not been quite successful.

I could talk a good deal about this matter concerning

\* Photographische Notizen.



the public and the photographer, but I won't tell tales out of school. Some very good hints may be gathered from Hartmann's little book on the subject;\* it only contains sixteen pages, and it is interesting to read, and will spare the photographer many explanations. It is distributed gratuitously in many studios.

In conclusion, I may refer to an anecdote that comes to us from America, and which is no doubt known to many already. "What do you charge for a picture?" said a labourer one day to a photographer. "Two dollars," replied the latter. "Very good, then, let me have a half length portrait, and I will pay you one." The photographer closed with the bargain, received the dollar, and in a few days sent the labourer his half portrait, but it was the lower half from his coat-tails downwards. The labourer of course pulled a long face over the business, and asked for the other half. But this was not, of course, handed over until another dollar had been paid.

### AMERICAN CORRESPONDENCE.

#### THE SEASON OF YEAR-BOOKS—MR. SHERMAN'S THREE-YEAR-OLD BATH.

*The Season of Year-Books* is at hand, and *Photographic Mosaics* has so occupied my spare time recently that I almost became guilty of forgetting my obligations to your readers in the matter of correspondence. I will, however, try to make up for it by giving you in advance some of the choicest things in the *Mosaics* for 1875.

*Mr. H. Sherman's Three-Year-Old Bath.*—Mr. H. Sherman, one of our most able teachers, ridicules the idea of constantly making up new baths, and sends me the following remarks on one he says has been in constant use for over three years. He says of it:—

"The first week in September, 1871, after a series of experiments, I prepared the bath which I am now using, and which has been in constant use ever since. It has never been boiled, nor have any means been employed to rid it of ether or alcohol, and there has never been a drop of alcohol added to the developer used in connection with it. It was sunned at first to precipitate any substance susceptible to the action of light, since which, exposure to sunlight has failed to produce hardly a perceptible effect upon the solution, usually not causing discoloration. It originally measured six gallons, at about which quantity it has been maintained most of the time by such additions, as required, of solution composed and prepared precisely as the original bath, except that no salt of iodine has been added with the subsequently prepared portions. It works to-day (September 26th, 1874) in every respect as well as it did three years ago; as well, at least, and, if my recollection is not at fault, decidedly better.

"Without enlarging further upon the merits or peculiarities of this bath, I will say that the experiment seems to be an important one, indicating, as it does, the possibility that a bath may be so constituted as to maintain, through the variable conditions consequent upon continuous use, the qualities or structure, so to speak, adapting it to the discharge of its required functions.

"Suppose a bath so constituted as never to need any treatment, save only replenishing and the removal of sedimentary matter or filtration. This is as near perfection as is ever possible for a bath. Even the life of an organism requires as much. Whether the bath under consideration shall fully answer such description or not, is not the experiment, if correctly reported, worth repeating? Assuming the affirmative, I will proceed to describe the method of preparing the solution.

"Take ice-water, sufficient quantity. In each quart (32 fluid ounces) dissolve 3 ounces of nitrate of silver. For each ounce of silver nitrate, add 1 grain each, previously dissolved, iodide and cyanide of potassium. Let the solution stand a few hours, shaking occasionally; after which filter. Then, to each quart of the liquid add one-half fluid drachm glacial acetic acid. Next add slowly, and with constant agitation, sufficient saturated solution of bicarbonate of soda to neutralize the acid. Set in the sunlight until discoloration ceases. Again filter, and finally make slightly acid, by adding a few drops of pure nitric acid.

"A peculiar reaction takes place, on the addition of the acetic

acid, which it is not necessary to consider here. The excess of this acid being afterwards neutralized by the sodium salt, it follows that acetate of soda is formed in the bath, and that, on addition of the nitric acid, acetic acid is substituted therefor, so that virtually no free nitric acid remains present.

"One peculiarity of this bath is, that the usual annoyances arising from the accumulation of ether and alcohol are, in some way, dispensed with; the ether and alcohol being converted into other products, in the main not impairing, if not positively aiding, the acting forces of the bath.

"Another peculiarity is, that the presence of a considerable quantity of acetate of soda does not result in the formation of quantity of silver. Immunity from this anticipated trouble is probably due to the cyanide.

"When the pinholes which denote over-iodization begin to appear—and this by no means happens prematurely—the bath is replenished by adding sufficient uniodized solution (prepared as at first, omitting only the iodide) to make up for loss of bulk and strength. Filtering occasionally becomes necessary from causes such as usually lead to this operation.

"The bath becomes more strongly acid by use, acetic acid being one of the products into which the ether and alcohol are converted. When from this cause its sensitiveness becomes sensibly affected, which is an unfrequent result, I correct the over-acidity by again adding bicarbonate of soda, thus partially neutralizing the acid, and adding a fresh supply of the sodium acetate. The number of times this treatment has been required during its lifetime has not been such as to cause the appearance of the unwelcome silver acetate.

"I have used this bath under a great variety of conditions, in and out of the studio, in strong and weak light, in summer and winter, with all manner of subjects, such as family groups, on large plates 14 by 18 to 17 by 20, consisting of white-robed children and black-draped seniors; subjects requiring long exposure, such as badly-lighted interiors and subjects intensely lighted. It gives a high degree of sensitiveness, together with detail and density. Infants are taken in the shortest possible time. The details of white drapery are exceptionally well rendered; the tendency to hardness or solarisation is seldom exhibited. Such certainty of satisfactory results, and such uniformity of action, I never before experienced and enjoyed.

"Whether, like 'the deacon's one-horse shay,' it will run exactly one hundred years to the minute, and then, all at once, turn into a small heap of dust, is what I want to know.

"It is recommended to the craft as an improvement worth trying. Let those who are so disposed give it a careful trial, following the directions above given for preparing it, without variation, at first; and, if found to be a good thing, let those who so find recommend it to others."

(To be continued.)

### A SUGGESTION.

BY WM. BROOKS.\*

You may think it a strange suggestion I have to make this evening. If it is carried out, I think it will be the means of creating a greater interest in the meetings of photographic societies, and may, perhaps, be the means of having them better attended, and, at the same time, will be a connecting link between the photographic societies throughout the world wherever photography has established itself; and I think the South London Society a very suitable one to introduce the matter to the notice of other societies, both at home and abroad.

It is this: to establish an exchange of photographic portraits (carte size, I think, will be most suitable) between the various photographic societies—in the first place, of all the office bearers of the societies and of other notabilities who have rendered such valuable aid to the advancement of our "art science;" such gentlemen I may mention as Mr. Carey Lea, the Revs. Canon Beachey and F. Hardwick, Mr. Thomas Sutton, and many others, not forgetting our worthy Editors. I am sure none would object to contribute to an album of a society provided and kept for that purpose, to be placed on the table each meeting night for the inspection of members. I think myself that if such a

\* A translation of this has appeared in our columns.—Ed. P. N.

\* Read before the South London Photographic Society.



system were adopted it would create a very great interest indeed to both amateur and professional photographers, and it would give greater interest to articles written when all of us would be able to see the portraits of the authors at our societies. There are scores of gentlemen of whom we have only heard by reading, and if we cannot see them to know them personally, it will, I think, be a step in advance to see their faces in the way I have stated. I am sure no society would object to further such an object. It also would enable many of us to recognize gentlemen who attend our annual technical meeting whose acquaintance many of us would like to make, and only know of their presence by seeing their names on the visitor's book.

I should be most happy to render any service in putting this suggestion in force. Should it meet your approbation, the new year, I think, would be a very suitable period for its introduction.

### HOW TO PRESERVE ALBUMEN.

BY GUSTAVE RE.\*

IF white of egg, after it has been beaten to a froth, and allowed to stand, is mixed with a little hydrate of chloral, in the proportion of five grammes of the latter to one hundred of albumen, the mixture may be kept in closed vessels for a considerable time without emitting any evil smell, or altering in any way in its qualities. If paper is coated with the albumen thus treated, to which chloride of ammonium, or common salt, has been added, as is the case when albumenized paper is prepared, there is no difference to be remarked between such albumenized paper and the material purchased in commerce. But I have remarked that an albumenized surface containing chloral keeps white for a longer period than one produced by means of half decomposed albumen.

The hydrate of chloral is without action upon a neutral or acid silver solution. The quantity that it is necessary to add to the albumen is very little; the greater part of this, too, evaporates on the drying of the paper, so that no injurious action upon the silver bath is to be feared.

To albumenized paper manufacturers this substance ought to be very useful, for not only does it render the work-rooms free from bad-smelling gases, but it permits the manufacture of a material which does not carry with it into the photographer's studio an objectionable odour.

The ordinary pyrogallie acid developer, which can be preserved for but a short time under ordinary circumstances, may also be treated with hydrate of chloral with similarly good results. It will then keep good for a longer period, with none of its previous qualities impaired. In many other ways hydrate of chloral may be made use of as a preserving medium; it is only necessary to prevent its coming into contact with strong alkaline liquids, as hydrate of chloral is soon decomposed into formic acid and chloroform.

### Correspondence.

#### KENNETT'S GELATINE PELLICLE.

SIR,—If Mr. Kennett's specification includes nothing beyond what had been previously published, which from the letter of "A Worker" seems to be very probable, I think he is deserving of both thanks and sympathy. Thanks, for having wrought out the gelatine emulsion process so thoroughly, and for placing it in so convenient a form before the public on terms so liberal that it seems doubtful whether it can possibly remunerate him; and sympathy for having made so expensive a mistake in obtaining a patent. I say mistake, for no one can believe for a moment that he knew

that the details of his supposed discovery had already been published, for the veriest child in such matters knows that prior publication invalidates a patent. Hence it is manifest that he believed his discovery to be new. Had he known that it was not he would probably have saved himself much trouble, and probably also photographers would have been deprived of the advantage of his pellicle, for without believing it to be his own, and only protected, it is scarcely likely he or anybody else would have entered upon the enterprise of its manufacture. If "A Worker's" statement be accurate, no one but Mr. Kennett is any the worse, and photographers are the better for the possession of his pellicle which may yet prove a great boon.

I have said "if" "A Worker's" statement be quite accurate; but I suspect that, although it may be the truth, it is probably not *all* the truth. When Mr. Kennett read his paper before the Photographic Society, he stated that he had experimented with gelatine for many years. I suppose such a statement is capable of proof, and this would show that he was not indebted to the comparatively recent publication of others for his knowledge of gelatine emulsion. Photographers are indebted to "A Worker" for his exertions in their interest; but a word on the other side is, I think, due.—Yours,

ANOTHER WORKER.

SIR,—I have no wish to fill your columns with discussions upon the value or worthlessness of Mr. Kennett's patent—that I deem a point for his consideration alone. My desire rather is, in the interest of my fellow-labourers, to state, for general information, my experience regarding Mr. Kennett's pellicle, which, in rapidity, cannot be approached by any of the commercial plates now extant. It is very much cheaper, and will, no doubt, eventually supersede those now patronized by the profession.

"A Worker," avoiding any consideration of the pellicle, dexterously bases his attack upon the patent. Possibly those amongst us who are of a speculative turn of mind, and might have been tempted to make Mr. Kennett a bid for his patent, ought to feel grateful for "A Worker's" interference; whilst others, like myself, who aim only at obtaining the latest improvements, will merely look upon his zeal as calculated to deprive us of an invaluable boon. I also fail to follow "A Worker's" argument that Mr. Kennett's action has barred the public from the use of a certain discovery bequeathed it by Messrs. Johnston and Maddox. If their pellicle is really easy of manufacture, and trustworthy in its results, why is it so little known? Where can negatives and proofs be seen? In how many studios has it found favour? I crave enlightenment.

As an amateur photographer, I feel indebted to Mr. Kennett for his pellicle, which, I hope, I may always find as excellent as I now believe it to be; but should he or anyone else discover something more rapid and equally reliable, I should not ride conservatism to death by sticking to my old love.

In conclusion, I must state that I hold that a correspondent should be man enough to avow his name when making innuendoes, rather than take shelter in a "nom de plume."

—Yours faithfully,

S. S. YOUNG.

Fairmile, Cobham, Surrey, Dec. 14th.

SIR,—As Mr. Aldridge, in a letter in your last, states that Mr. Kennett "exhibited negatives and prints at the Technical Exhibition of November, 1873," it is necessary for me to call the attention of your readers to the exact date of that Technical Exhibition. It was November 27, 1873.

Now, as I have shown in your last that the making of a gelatine emulsion, and the method of allowing it to become solid when it was to be cut in slices, and then washed to remove the excess of bromide, had been published at the dates of September 8, 1871, August 8, 1873, and November 14, 1873, and that Mr. Kennett actually patented these very

\* Photographisches Archiv.



things on November 20, 1873, following very closely even the words of the gentleman who had previously published the whole process *pro bono publico*, it is necessary that no misconception should occur, and that it should be plain that Mr. Kennett's "discovery" was in no way original.

A WORKER.

SIR,—In Mr. Aldridge's letter in last week's *News* he is pleased to say that my communication of the 4th contains "much personal abuse" of himself. I am quite sure that if this statement contained one iota of fact you would not have allowed it to appear. I could have no object in abusing Mr. A., who is totally unknown to me.

As an amateur, I was merely seeking information in regard to a process with which I have only partially succeeded, but which I have always felt had good and promising qualities. I hope that Mr. A. will, upon a re-perusal of my letter, see that he has been rather hasty in stating that I have been guilty of so ungentlemanly an act as to abuse him or anyone else.—I am, sir, your obedient servant,

A DRY PLATE.

SIR,—In answer to "Dry Plate's" request I will endeavour to give my experience. First packet worked according to the formulae: the plates took ten minutes to develop a faint shadow; trying to get them dense, the film burst up. Cause: the ammonia and bromide not fresh. Second trial: pictures came out on applying fresh chemicals, with bromide in excess of formulae; they came out in ten or twelve seconds, but still burst up on applying intensifier. Cause: insufficient washing between developing and intensifying, the ammonia and acid making a kind of effervescing mixture. Third trial: succeeded in getting a transparency by contact printing, but still not able to get sufficient intensity without discolouring the film, slightly fogging, when we were compelled to stop. I called on Mr. Kennett, who showed me some excellent negatives, and developed a transparency on one of the plates I had prepared. He told me I had not got enough pellicle on the plate. Bought some more, and went home to try again. The difficulty we find is to prepare—or, rather, to dry—the plates, as they have to be done with so small an amount of light.

I also tried to take a few negatives, but found much the same difficulty. I certainly got a negative that printed, though not a work of art by any means. I think much of my failure was owing to the light I worked in being too strong. Mr. Kennett's light is two thicknesses of orange-coloured glass, and he has two doors to the dark room, so as to more effectually exclude light. He gave me a great deal of time and attention, and I think when anyone has succeeded in working the process it is invaluable. I have not had time for still further trial, and may say, in conclusion, that I have had no experience in dry plate work of any kind before, always working the ordinary wet process, which I think is less rapid than the pellicle. I enclose a transparency for you to see.

W. J. DAVIES.

29, Church Street, Stoke Newington.

[The results forwarded have many very fine qualities.—Ed.]

SIR,—It is not greatly to the credit of photography that there is to be found in its ranks individuals who, like "A Worker," retire behind the hedge of an alias, and from that safe retreat can attack my patent with missiles he would hesitate to employ in the more honourable arena of personal combat. I have pleasure, however, in saying that he has overreached himself, for his attack upon myself and my patent has only had the effect of making more widely known my pellicle, and, incidentally, the plates prepared by it, on the manufacture of which I am to be engaged.

The citation of the names of Dr. Maddox and Mr. Johnstone, and the innuendo indulged in by the "Worker" that I obtained from a letter published on the 14th of November,

1873, all the information that was embodied in my patent, is a *suppression veri* easily met by giving the following extract from an article by the editor of the *British Journal*; and I invite attention to the fact that the article was published on the 15th August, 1873. I imagine it will require all the casuistry of "A Worker" to prove that August 15th is later than November 14th.

The article is headed "Substitute for Collodion," and the writer goes on to say: "Among those who are actively engaged in experimenting, with a view to providing a substitute for collodion in the bromide emulsion process, is a well-known amateur, Mr. Kennett, of Maddox Street. This gentleman has within this last fortnight 'resumed' some experiments with gelatine which he began several years ago, but discontinued from not having obtained such vigour as he required. Since the subject has been brought so prominently forward, as it has of late, Mr. Kennett has repeated his experiments with a considerable increase in the amount of bromides. The result has been singularly successful. We have now before us two negatives with a film of such smoothness and hardness as might easily be mistaken for albumen, and altogether we are pleased to be able to say that in our next we shall publish working directions, which have been kindly promised by Mr. Kennett. This gentleman appears to have overcome a difficulty encountered by several, viz., making the emulsion to keep."

It may suit "A Worker" to speak about my name never having been known in photography previous to my applying for a patent. The quotation given above disproves the suggestion. It is true that I have not courted that publicity so sought for by some, who continually obtrude their names before the public, no matter on how flimsy a pretext; still, my name was not quite unknown even before that time; but even if it had been, what then?

This is not the place for me to enter into a defence of my patent, and to show that "A Worker" has abstained from touching the real point of my invention. I am ready, however, to give every information that may be required, but must decline to do so at the instigation of anonymous writers, who vilify a process that I venture to predict will, ere long, drive out of the market all the much vaunted and so-called rapid dry collodion plates, the most rapid of which are, by comparison, exceedingly slow.

R. KENNETT.

[This discussion has already occupied too much space, and must cease for the present. The pellicle, which already promises well, will be best tested by practical trial, and the validity of the patent can only be efficiently discussed in a court of law.—Ed.]

#### PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

DEAR SIR,—Will you kindly grant me space to announce that the First Annual General Meeting of the Photographers' Benevolent Association will be held at the Co-operative Institute, 55, Castle Street, Oxford Street, on Monday, January 11. After the despatch of business there will be a Siopticon Exhibition, exhibition of the prizes in the Art-Union distribution, and a musical entertainment by photographic friends. There will be microscopes, graphoscopes, and other scientific apparatus. Refreshments will be provided at a reasonable price, and special arrangements have been made to secure the comfort of ladies.

Further particulars will be announced as to programme in due course.—I remain, yours respectfully,

174, Fleet Street.

W. T. WILKINSON.

P.S.—I shall be glad to hear from any one who has objects of interest for exhibition on this occasion.

#### Proceedings of Societies.

##### PHOTOGRAPHERS' BENEVOLENT ASSOCIATION.

THE Ordinary Monthly Meeting of the Board of Management was held at 174, Fleet Street, on Wednesday, December 2nd, W. S.



BIRD, Esq., in the chair. Minutes of previous meeting having been read and confirmed, Messrs. Croft, Berjemant, and Laing were admitted members of the Association.

The Secretary was instructed to engage a hall for the Annual General Meeting, on Monday, January 11th, 1875, for which occasion the Secretary announced that W. B. Woodbury, Esq., had promised to lend a sciopticon and slides. B. A. Ferneley, Esq., F. York, Esq., and R. Kennett, Esq., had also promised slides.

The Secretary laid before the Board a request from the Art Union Sub-committee for a grant of money for the purpose of advertising and carrying out the Art Union Distribution.

The Chairman having expressed his opinion that such a course could not be taken without a guarantee that the funds would not suffer in case of failure, a guarantee fund was subscribed by the members present. The sum of £10 was then voted for the use of the Art Union Sub-committee. After the transaction of routine business, the meeting was adjourned. W. T. WILKINSON.

#### SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE annual meeting of this Society was held in the rooms of the Society of Arts, on the evening of Thursday, December 16th, Mr. T. SEBASTIAN DAVIS in the chair. The minutes of a previous meeting having been read and confirmed, the following gentlemen were elected members of the Society:—Messrs. Wratten, Skinner, S. Fry, and W. H. Wainwright.

After some conversation on various points of business, the Secretary read the following

#### *Report of the South London Photographic Society for 1874.*

"Our committee, in presenting their report for the session of 1874, most heartily congratulate your Society upon the healthy vitality and consequent strength which have characterised its existence during the past year. In addition to a very large increase of members, whom it is confidently anticipated will render valuable assistance to its proceedings, the past session has brought the South London Photographic Society prominently before the photographic world, in maintaining itself as the medium of what is new, instructive, and thoughtful.

"The institution of a Technical Exhibition, which your Society inaugurated, has this session been brought under the control of regulations which has placed it upon a firm basis, and which, in future, will make this meeting exceedingly useful and attractive. The ordinary meetings have been attended by a very large percentage of members, and great interest and animated discussions have shown the value of the subject matter brought before the Society.

"Your Committee have to acknowledge their indebtedness to the Society of Arts for so kindly placing one of their rooms at the disposal of your Society for its ordinary meetings.

"The following papers have been read during the session, viz.:—'On the best way to make Enlargements,' by B. J. Edwards; 'My Troubles in taking Direct Large Heads,' by W. Aldridge; 'My Experience in taking Direct Large Heads,' by H. Garrett Cocking; 'On Studios,' by S. Fry; 'On various Colouring Matters suitable for Tinting Films,' by J. Spiller; 'On an Apparatus for Reducing Silver Wastes,' by J. Bashford; 'On a Method of producing Large Composition Groups,' by B. J. Edwards; 'Suggestions for a National Congress of Photographers,' by Jabez Hughes; 'Principles and Practice of the Portrait Painters,' by A. R. Aldridge; 'A Suggestion,' by W. Brooks.

"One meeting was devoted to a conversation upon the subject of the permanency of prints, introduced by the Secretary, and another to a practical demonstration, by Mr. Wratten, of the production of negatives by the Obernetter process.

"Photographs, apparatus, and appliances, have been exhibited by the following gentlemen, viz.:—Messrs. B. J. Edwards, S. Fry, H. Garrett Cocking, J. Spiller, Kennett, F. Howard, Wilkinson, Tully, Bashford, Oakley and Co., W. Hunter, Spencer, Sawyer, Bird and Co., Harrison, Cussons, Miers, Attwood, and the Secretary.

"A considerable amount of work has thus been got through during the session; and, in conclusion, your committee trust that the same principles of social, pleasant, and happy intercourse which have hitherto guided your Society in its deliberations will always be maintained, and thus tend to promote, not only the pleasure and interest of each individual member, but also the further study and general progress of our art-science."

The Treasurer's report was then read, and showed a balance in hand of £18 5s. 1d.

The election of officers for the ensuing year followed, Mr. Davis previously stating that having held the office of vice-president for fifteen years, ever since the foundation of the Society, he felt it now desirable to resign, because other duties would claim his attention, and he thought change now and then in the officers was desirable. The following officers were elected:—

*President*—The Rev. F. F. Statham, M.A., F.G.S.

*Vice-Presidents*—G. Wharton Simpson, M.A., F.S.A.; Valentine Blanchard; Jabez Hughes; J. Spiller, F.C.S.; and F. York.

*Committee*—Messrs. Bridge, Brooks, Hunter, Foxlee, Morgan, Aldridge, Wilkinson, and Ayres.

*Treasurer*—Noel E. Fitch.

*Hon. Secretary*—Edwin Cocking.

Votes of thanks to Mr. Davis, Mr. Fitch, and Mr. Cocking having been passed and acknowledged,

Mr. ALDRIDGE read a paper on the "Principles and Practice of the Great Portrait Painters." A number of photographs by M. Adam Salomon, Mr. Blauchard, Mr. Crawshaw, and others were exhibited in illustration of certain points. Owing to the lateness of the hour the discussion was postponed; we shall therefore postpone the publication of the paper for a few weeks.

Mr. BROOKS read a brief paper suggesting a system of exchange of papers between societies (see p. 608).

After some conversation the proceedings terminated.

### Talk in the Studio.

**KEEPING QUALITIES OF COFFEE PLATES.**—A correspondent, Mr. J. Turnley, informs us that he has just secured two good negatives on coffee plates prepared by himself in March, 1872, or two years and three-quarters ago. They received eight times the exposure required by a wet plate, developed easily and quickly, and are without fault.

**FILTER FOR NITRATE BATH.**—A correspondent of the *English Mechanic*, referring to the filter described by Mr. Speight some time ago in our columns, says:—"If the bath has been poured into a wide-necked glass bottle, in which a stop-cock is fitted at about  $\frac{1}{4}$  in. from the bottom, and allowed to settle, it can be drawn off by the cock perfectly bright and clear, without the least trouble or inconvenience."

**IMPERIAL PORTRAITS.**—A writer in the *Daily News*, in speaking of the influences used to secure a Bonapartist reaction in France, says:—"Some three million photographs of the Emperor or Prince Imperial, with seditious mottoes (we quote official figures), have been seized by the police. But how many have escaped unseized? M. Haentjens, member for the Sarthe, who manages the photograph department of the propaganda, could alone tell how many portraits have been issued."

**AUBELTYPE** is said to be a new process invented by Aubel and Kaiser, of 38, Lindenhöhe, Cologne, for the purpose of rendering photography serviceable in lithography.

**BLACKENING SHEET ZINC.**—The following is a new process lately discovered for obtaining zinc sheets of a solid black colour. The sheet of zinc is cleansed by hydrochloric acid and sand, and then plunged into a solution of equal parts of chlorate of potash and sulphuric acid. A slight velvety-black deposit is immediately formed. The plate is carefully washed with water, allowed to dry, and then plunged into a solution of asphalt in benzine, left to drain, and rubbed with a piece of cotton rag.—*American Chemist.*

### To Correspondents.

**\*\* TO AGENTS AND ADVERTISERS.**—Next Friday being Christmas Day, the PHOTOGRAPHIC NEWS will be published on Thursday, December 24th. Advertisers should send in their Announcements not later than Wednesday, the 23rd.

**J. A. DUNCAN.**—It appears to be an imprudent course to continue to advertise one scale of price, and in practice adopt another, but you will see it is a matter in which we cannot interfere in any way, as we have no responsibility or connection whatever with the announcements of advertisers. As we understand the matter, you were informed of the revised scale before the work was done, and the simplest plan would have been to request the return of the money and the negatives, if you were unwilling to pay the higher rate.



**ENCAUSTIC.**—The use of encaustic paste for finishing photographs we consider to be on the whole beneficial, and we have never seen any that became yellow or injured in any way by the use of encaustic. We have some prints by M. Adam Salomon, produced about eight years ago, and treated with his encaustic paste (the formula of which we published) in which we see no change whatever. If turpentine be used in making the paste there may be a tendency to become yellow. The copies of Vogel's Handbook are promised, but have not yet arrived.

**ALBERTYPE.**—The Woodburytype and Albortype are both photo-mechanical processes, and are best suited to the production of large numbers. The term Autotype as now employed is not, when used alone, sufficiently distinctive, as it is applied to a photo-mechanical process analogous to Albortype and to carbon printing. The latter is better suited to the production of small quantities than any of the mechanical processes, because, in both the photo-collographic processes and the Woodbury process, the first preparation of the printing surface requires time and care, which would scarcely be repaid by the production of a small number of prints. The Albortype process is not patented in this country. The Woodburytype patent has expired. The carbon process is patented, but there is comparatively little restriction placed by the patentees on its use. The Autotype Company issue a manual with full instructions. There is no work devoted to either of the other processes.

**MELBOURNE.**—There are various methods of producing photographs on ivory which we have published. The simplest consists in coating the ivory with collodio-chloride of silver, and printing, toning, and fixing in the usual way; but there is always some risk of the print changing from not getting rid of the hypo used in fixing. We prefer to print deep, therefore, and fix with cyanide. But it is, perhaps, safer to transfer a print produced either by collodion printing in the camera, or by collodio-chloride, or by the carbon process. The latter is now most generally used for ivory. We have more than once described the details, and you will find them in the Autotype Manual issued by the Company.

**CARBON AMATEUR.**—The powder process has been used and patented for carbon printing. Mr. Window obtained a patent some years ago, the details of which closely resemble those now used in reproducing negatives. Here is his formula:—

Honey	...	...	...	...	...	2 parts
Glucose	...	...	...	...	...	4 "
Albumen	...	...	...	...	...	3 "
Dextrine	...	...	...	...	...	1½ "
Saturated solution of bichromate of ammonia	...	...	...	...	...	7 "

Spread this sensitive solution upon paper, ivory, canvas, wood, &c., then dry it by means of heat, and expose it under a transparent positive to light. When exposed sufficiently, brush powdered pigment over the surface until the image is sufficiently developed, and proceed to fix the pigment on the surface of the paper or other material. Effect this by laying the print, immediately after being developed, in a flat dish, and pouring alcohol, naphtha, or some other such agent over it, wetting both back and front; the print is then hung up to dry spontaneously, or a gentle heat may be employed. When quite dry, it is immersed in a dish of water acidulated with hydrochloric, sulphuric, or some other acid, which will dissolve out all the soluble portion of the coating. The print is then soaked for a short time in clean water, and finally passed through a dish of water rendered slightly alkaline with ammonia, to expel any trace of acid.

**W. M.**—A single lens is not well suited for architectural work, as it will inevitably give some degree of curvature to straight lines. One of the doublets or a rectilinear will answer your purpose best, as it serves well for other landscape or architecture. We cannot very well recommend special lenses in these columns; but if you send a list of any you contemplate, with distinguishing names or figures, we can better help you.

**CRANKY.**—To produce a transparency by contact printing, you must use a dry plate prepared by any of the dry plate processes you may determine. The exposure will not need to be more than a few seconds to daylight, or about one minute to a gas flame. The coffee process, or the morphia process, or some of the more simple processes, will answer; but whichever you select you must follow the instructions carefully. A simply washed collodion plate such as you describe will in some cases yield a good picture, but something depends on the quality of the collodion; but an exposure of fifteen minutes to sunlight, and fifteen minutes more to daylight, under a negative would, in all probability, give you nothing but a fogged plate. But suppose the exposure to have been right, treating it with an iron solution without any silver present would not yield an image, but would rather tend to destroy any image there was. Iron developers or pyro developers with acid require a few drops of silver added before an image is produced on such plates. You may produce transparencies on wet plates if you place strips of thin card at the corners to prevent absolute contact, but of course there will be a little loss of sharpness. You will find several dry processes in our forthcoming YEAR-BOOK. It is desirable that a muffle should be heated all round to secure uniform heat.

**F. J. D.**—We fear that you will need to practice a little more before you can obtain an operator's situation. Merely practising open air portraiture, will not readily familiarize you for all the varying conditions with which you must be well acquainted in studio work, of which producing varied effects in lighting is an important feature. No. 1 is not quite sharp, and lacks the relief produced by proper contrast of light and shade. No. 2 is under-exposed. Get a few good portraits, and try to produce results quite equal to them.

**C. HORNE.**—Excess of acid in the nitrate bath will, under ordinary conditions, actually render the plate less sensitive; it will also retard development. There are conditions in which excess of nitric acid seems to give increased sensitiveness; but they are not well defined. Ordinarily, excess of nitric acid is believed to have a tendency to destroy the latent image as it is formed, and thus actually retards its production. 2. The greater the proportion of acid in the bath, the less the proportion necessary in the developer. 3. The chief offices under Government in which photography is necessary are filled by military photographers. There is a photographic staff at Chatham in the Engineers, and another at Woolwich in the Artillery. So far as we know, these would generally furnish photographers for all Government work. The interior and the combination print are both good.

**T. H.**—To produce transparencies in carbon you simply make sensitive carbon tissue, expose, immerse in water, attach to a sheet of glass in the usual manner, and then develop. The result is a carbon transparency.

**R. B.**—An iron crucible does not answer well. The best are of clay, and are known, we believe, as London pots. 2. The engravings in question are generally copyright, and can only be reproduced by permission. 3. French pyrogallie acid will serve.

**JOHNSON, MATHEY, AND CO.**—Thanks. We shall have pleasure in using the information.

**MAULL AND CO.**—The markings have the appearance of mechanical injury, as though the prints had been roughly used at some stage of their progress. Drying before a fire will sometimes produce such cracks.

Several Correspondents in our next.

## METEOROLOGICAL REPORT FOR NOVEMBER.

BY WILLIAM HENRY WATSON.

Observations taken at Braystones, 36 feet above sea level.

Date.	THERMOMETER.			BAROMETER.			Direction of Wind at 9 a.m.	
	Morning.	Noon.	Night.	Morning.	Noon.	Night.		
1	50°	54°	48°	30.14	30.10	—	S.	Fair, generally gloomy.
2	51°	53°	52°	29.82	29.85	29.82	S.W.	Rain a.m. and p.m.
3	50°	51°	50°	29.87	29.85	29.82	S.W.	Rain p.m. Gloomy all day.
4	54°	54°	54°	29.89	29.89	29.85	S.S.W.	Fair, dark, and gloomy.
5	53°	53°	47°	29.81	29.85	29.90	S.	Drizzling rain all day.
6	54°	57°	53°	—	—	29.98	S.	Fair and sunny.
7	53°	54°	50°	30.09	30.24	30.26	S.W.	Fair. Gloomy.
8	49°	50°	50°	30.25	30.24	30.19	S.	Rain at night. Gloomy all day.
9	52°	54°	50°	31.13	30.07	29.93	S.	Rain a.m. and p.m.
10	45°	46°	39°	29.98	29.90	29.99	N.	Fair. Gloomy.
11	39°	41°	32°	29.99	29.92	29.99	N.E.	A little snow and hail p.m.
12	32°	32°	43°	29.96	29.93	29.86	N.W.	Fair all day. Gloomy.
13	42°	44°	37°	29.74	29.86	29.96	W.	Fair and sunny.
14	39°	41°	39°	29.91	30.00	29.61	W.	Rain p.m. Gloomy all day.
15	43°	47°	45°	29.33	29.40	29.14	N.W.	Rain this evening. Gloomy.
16	45°	47°	45°	29.44	29.39	29.35	N.N.W.	Rain a.m. and p.m. Strong wind at night.
17	45°	47°	46°	29.75	29.61	29.70	N.W.	Fair, but gloomy.
18	42°	—	50°	29.57	—	—	S.	Rain a.m. and p.m.
19	46°	46°	40°	29.50	29.47	29.54	S.W.	Rain a.m. and p.m. Hail p.m.
20	49°	47°	39°	29.69	29.81	29.89	N.E.	Fair, but cloudy.
21	34°	45°	32°	29.94	29.94	29.32	E.	Fair. Generally sunny.
22	34°	41°	42°	29.84	29.81	—	S.E.	Fair. Gloomy.
23	36°	43°	58°	29.90	29.95	30.00	S.E.	Fair, dark, and cloudy.
24	33°	42°	41°	29.91	29.90	29.81	S.	Rain a.m. and p.m.
25	41°	42°	40°	29.59	29.50	29.30	S.	Rain morning and evening.
26	37°	43°	36°	29.50	29.50	29.59	S.	Dark and gloomy.
27	37°	37°	34°	29.43	29.42	29.43	S.E.	Slight snow. Showers all day.
28	34°	37°	41°	29.38	29.32	29.00	E.	Rain, with very strong wind. at night.
29	38°	34°	40°	28.43	29.47	29.60	—	Constant rain all day.
30	42°	45°	40°	28.69	28.75	29.00	S.W.	Shower of rain at noon. Gloomy all day.

From the above data I arrive at the following:—

	Mornings.	Noons.	Nights.
Maximum temperatures observed	...	...	...
Minimum ditto	...	...	...
Mean ditto	...	...	...
Mean ditto of whole	...	...	...
Number of fair days	...	...	13
Number of days on which rain fell	...	...	17
Number of fair days on which it was gloomy	...	...	10
Number of fair days on which it was sunny	...	...	3



# The Photographic News.

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## PRESENTATION OF THE PRESIDENT OF THE SOUTH LONDON PHOTOGRAPHIC SOCIETY.

AN interesting event in the history of photographic societies occurred on the evening of Thursday last, at the Annual Dinner of the South London Photographic Society, when a presentation was made to the Rev. F. F. Statham, M.A., the President of the Society. For nearly sixteen years (ever since the birth of the Society, in May, 1859), Mr. Statham has presided over its meetings with an assiduity and constancy of attendance scarcely equalled by that of any other member of the society. Originally, and for a brief time, an offshoot of a literary society in the South of London, the first independent meetings of the Society were held in a school-room connected with St. Peter's Church, Walworth, of which Mr. Statham is the Rector, and he presided over the meetings of the Society there. By-and-bye a gradual preponderance of members not resident over the water rendered a more central position desirable, and the meetings were held in the City of London Institute in Leadenhall Street, and Mr. Statham, notwithstanding that society left the South, continued his presidency there, and also during its further migrations up to the present time. Mr. Statham is not a photographer, but an ardent lover of science, and a highly accomplished gentleman, with a large, kindly, genial nature, delighting in every opportunity of promoting the culture and happiness of those with whom by choice or chance he is thrown into contact. It is in virtue of this largeness of heart and high culture that he holds the presidency of the South London Photographic Society, and it is greatly due to his presidency that the Society has continued in existence and has steadily grown in activity and in influence, whilst other suburban societies have become extinct. A "sweet nature, gilded by the gracious gleam of letters"—to borrow a phrase from the Laureate—presiding with a benign courtesy, with a bearing at once bright and cheerful, and a happy suggestiveness often more valuable than precise practical knowledge, have given to the monthly gatherings more of the character of friendly re-unions than formal meetings. The President's tenure of office in the South London Society is annual, but no doubt has ever entered into the mind of a single member as to the naturalness or fitness of the re-election of Mr. Statham. The project once mooted of presenting to him the admirable life-size enlargement of the Autotype Company from Mr. Blanchard's fine negative, skilfully coloured in oil, was at once endorsed by every member of the Society; and the project was so privately carried out that until, with a fine dramatic touch, the portrait was uncovered at the close of Mr. Hughes' speech, the President himself knew nothing of it, and was the only one in the room to whom it was a surprise. How glad a surprise we need not attempt to indicate. The occasion was a pleasant and satisfactory one to all. No society could have a better President, and none could better appreciate their privilege or show stronger fealty to a worthy chief.

## PHOTOGRAPHIC DESIGNS FOR ORNAMENTING WOOD.

WE referred recently to the various surfaces suitable for photographic purposes, to which, however, they had rarely been applied, mentioning, amongst others, white woods of fine texture. A specification of a patent taken some time ago describes the special application of photography to the production of ornamental designs on wood. The specification is chiefly devoted to means of printing directly upon the surface of the wood, veneers being used to simplify manipulation, and admit of polishing with the remainder of the wood, into the surface of which the pieces containing the photographic designs may be inlaid. It is obvious that many very pleasing effects in fancy cabinet work may be produced by the aid of photographic designs, whether of pictorial or decorative subjects, which could not so readily be produced by any other method. The use of carbon prints transferred to the surface of the wood, and varnished, or French polished, would probably be preferable to the methods described in the specification, which is as follows:—

"Our invention relates to certain improvements in the means or method of producing photographic pictures or designs of any description on or in the surface of veneers and solid wood, and in applying such photographed designs or devices to every required class of cabinet work, fancy wood articles, to walls, house panelling, and other such like decorative purposes. In order to effect these objects we take a piece of even-grained veneer suitable to the article we desire to ornament, and plane both sides of the same with a toothed iron plane until it is of an uniform thickness. One side we leave in this rough state so as to be ready for treatment with glue or other adhesive solution. The other side we scrape and rub with glass-paper so as to remove all the marks of the plane, leaving a perfectly smooth surface, which we damp with water or some other suitable liquid in order to cause the grain of the wood to rise. We then allow the wood to gradually dry, and again we rub with very fine glass-paper. We again repeat the damping and rubbing until the wood grain ceases to rise. We now apply to the surface with a sponge, brush, or blotting pad a solution of chloride of sodium or chloride of barium (the former by preference), and gradually dry the same, when it is ready to be sensitized with a solution of nitrate of silver. We desire this silver solution not only to come in contact with the surface of the wood (as is the case with photographs printed on wood for engraving purposes), but to penetrate to some extent into it, as hereafter described. We now place the photographic negative on the sensitized wood, and the printing is then performed in precisely the same manner as photographs on paper.

"The process of laying the veneers is as follows:—We take a piece of wood veneer on which a suitable photographic picture or design has been imprinted, and cut it to the shape we consider requisite for the subject in hand. We then prepare the toothed or rough surface (previously referred to), and glue the same or otherwise cause its adhesion into the centre or other part of the article we wish to decorate by placing it under a heated piece of smooth metal or wood, and compressing the same with screws in a calbench or in any other usual way of fixing veneer. When sufficiently dry and hard we fill up the surroundings of the table top, panel, or other article by gluing or cementing around and abutting up to the photographic design veneers of walnut or other suitable woods (with or without photographic devices thereon). After allowing the same to dry we plane off and smooth down to the surface of the photographic picture (or pictures). We then proceed to polish both the surroundings and the picture (or pictures) with transparent French polish, which has the effect of hardening by penetration the fibres of the wood, and materially aids in bringing out all the details,



Our object in permitting the silver solution to penetrate into the pores of the wood is that thereby the light acting on the chloride of silver darkens it so far into the fibre of the wood as the silver has penetrated; for, as a part of the surface of the picture may wear away in time, as some parts necessarily must which are very much exposed and used (such as a table top, for example), yet the greater part of the detail of the photograph remains.

"We also apply our invention as follows:—We take a piece of veneer which has a picture, design, portrait, image, or view photographed thereon. We lay it upon a walnut or other veneer which has been cut sufficiently large to cover the surface of any given article. We then with a very fine saw cut through both veneers to the line or figure required. We take away the under piece, and allow the top or photographed veneer to drop into its place, for since both would be cut by one and the same operation, it would also follow that one would fit securely into the other. We then glue or otherwise attach a piece of paper over that side on which the photographic picture or design is printed. It can then be kept already prepared to glue in or attach to any article requiring ornamentation, either furniture already manufactured or in course of manufacture, also to be applied to walls or interiors of houses, and for panelling and other decorative purposes.

"In regard to solid woods or surfaces which have previously been veneered, we prepare the surface as before described, and print the photographic pictures or designs in the same manner as for veneers.

"The invention is, of course, equally applicable to the production of pictures to be framed and glazed.

"Having now described the nature of our said invention, and the manner in which the same is to be performed, we would remark, in conclusion, that we do not limit or restrict ourselves to the precise details expressed, as it is obvious that the means or methods described for effecting the objects of the invention may be varied or modified without departing in any way from its principles either in reference to chemical or mechanical details; but what we claim and desire to be secured to us by the herein in part recited Letters Patent consists,—

"Firstly. In the improved means of producing photographic pictures or designs of any kind on veneers and solid wood.

"And, secondly. In the improved means of applying photographic productions to cabinet work, furniture, fancy wood articles, and other decorative purposes, all substantially as herein specified."

#### AMERICAN CORRESPONDENCE.

##### BLISTERS—BATH RENOVATION MADE EASY AND SURE.

*Blisters.*—Are you troubled with blisters? This query caused a long discussion at our Chicago Convention, and Mr. Hearn, author of the "Practical Printer," treats of it as follows:—

"In the case of the writer, he found that the blisters generally occurred in the fixing bath after the prints had got about one-half fixed, and then, by the time they were ready to be removed, they would either altogether be covered with innumerable myriads of infinitesimal blisters, or else they would partly be treated with very large ones; in either case drying down very badly. The usual remedies for such cases (such as weakening gradually the strength of the hypo, and placing the prints after they were fixed in a bath of chloride of sodium) were tried, but without much success, for after the prints had once blistered it seemed to be an impossibility to remove them effectually, especially so when they were very large or at all numerous.

"The writer was using at the time, in his fixing bath, one part of a saturated solution of hypo to five parts of water, and fixing from eight to ten minutes. Upon experimenting, it was found that if the prints were placed in an alum bath before fixing (saturated solution of alum one part, water five parts) they would often be without the blisters; yet, as they would occasionally

have them, other means were resorted to, which eventually resulted successfully in connection with the alum bath before fixing: it was that of reducing the density of the soda solution down from one-fifth to one-tenth and even one-twelfth, and fixing a proportionally longer time.

"From the above it was ascertained that the double paper should be subjected to mild treatment in the fixing bath, and also that the albumen softens and, consequently, blisters in the hypo, and thus the necessity of some substance in the hypo bath that would coagulate the albumen and prevent its blistering. For this purpose common alum has been used, but is generally, almost immediately, abandoned as an impractical ingredient, on account of the danger of its liberating sulphur, and the disastrous results arising thereby. Mr. H. T. Anthony advised the use of nitrate of alumina in the fixing bath, as it answers the same purpose as the alum without the disadvantages of the latter, and upon trial it proved practically to be an excellent chemical. However, placing the prints for a few minutes in an alum bath before fixing, and rinsing them once or twice with fresh water before they are removed to the fixing bath, answers the purpose equally as well as the addition of other ingredients to the hypo bath would, without any danger of bad effects resulting therefrom.

"But when blistering of the paper occurs before the prints are placed in the hypo bath, and not afterwards, then a far different reason from the above is the cause. For instance: Let us suppose that, after the paper is printed, the prints are acidified in lukewarm water, washed in cold water, toned in a bath of different temperature from either the above (generally blood-warm), placed in a dense and cold salt solution, fixed in a cold and strong hypo solution, soaked in another bath of salt water, probably also of a different temperature as well as different density from what the fixing bath itself was, and then perhaps, after the prints had been soaking in this salt-water bath for ten minutes or so, they are suddenly transferred to the washing tank, where the water is probably quite cold, as well as being of a much lighter density than the preceding bath.

"Can any printer expect that the paper will undergo such treatment as the above and not blister? Why, the printer ought to consider himself fortunate that nothing worse befalls his prints rather than to complain otherwise; and yet the above-described method in which the paper is treated after printing is precisely the way in which the double paper is washed by the majority of photographic printers to-day.

Such slight (?) things are not considered as worthy of the attention of the printer, and hence he utterly ignores them; but rather on the contrary, is it not a matter of some surprise that the tender surface of the albumen paper can undergo such treatment at all? I think it is.

"To judge of what temperature to have the solutions in which the prints are placed, take for a guide, the temperature of the water by which the final washing is to be accomplished, and have all of the solutions as near that as is possible, a thing which is very easily done, by using that water as taken from the faucet to do the washing in. In the winter season great care should be taken about using the water too cold.

"As to the toning bath, do not warm it a particle, as is often done to facilitate the working of it, but let the bottle in which the toning is kept be placed in a cool place, and that will also be the best way to use the toning bath, for with a warm bath the tones are never as good as they are with a cool bath, but not too cold.

"As to the density of the salt solution after fixing, make up the bath so that, upon tasting, it will give a pleasant saline taste to the tongue, and, after the prints have remained in here full ten minutes, reduce the solution very gradually down to the density of the tap water.

"I hope that the above may be the source of extricating some brother photographic printer from his troubles."

*Bath Renovation Made Easy and Sure.*—Mr. B. W. Kilburn says, on this subject:—

"There is a great deal of stumbling among photographers in the matter of renovating an overworked bath, and a great deal of time lost in bringing about what is usually an imperfect result. I do not advocate frequent "doctoring," but there are times when the bath becomes so charged with ether, alcohol, and organic matter that, like an overloaded stomach, it fails to do its duty, and it must needs have attention. When that is the case, I find the following method the easiest and the best; and I am not yet quite sure but what my bath works better after I have thus heated it than it did originally.

"Proceed as follows:—Empty the bath solution into a wide-



mouth bottle, large enough to hold twice as much solution as your bath contains. Now place some bicarbonate of soda upon a clean glass plate, break up the lumps with a case-knife or spatula, and add the soda to the solution very gradually, stirring with a stick or a glass rod constantly. Precipitation begins as soon as you add the soda. The solution will boil and simmer, and rise to the mouth of the bottle, perhaps. Should it do the latter, stir more rapidly among the bubbles which rise to the top, and blow upon them violently, when the boiling will subside. With proper care, none of the solution need be lost. Continue thus to add the soda, and stir until all action ceases, and then set aside until the fluid portion is perfectly clear. Now pour off the fluid carefully and slowly, and add fresh water. This 'washing,' *i.e.*, pouring off and adding fresh water, should be repeated say a dozen times, until the precipitate, which is carbonate of silver, is thoroughly cleansed and free from smell. Now to this washed precipitate carefully add C. P. nitric acid, shaking gradually. Continue this until all but a few grains of the carbonate is dissolved. Now add water, testing with the hydrometer until you obtain the strength of solution desired for your bath. Then filter, test with litmus-paper, and, if acid, add bicarbonate of soda until the bath becomes barely neutral. If not acid, make it slightly so by adding C. P. nitric acid. No iodizing is necessary in such cases."

Perhaps you have enough this time. We are looking for the YEAR-BOOK anxiously, laden with good things as it always is. Wishing you a very happy new-year, I am truly yours,  
EDWARD L. WILSON.

### ACCESSORY EXPOSURE OF THE SENSITIVE PLATE.

BY BENJAMIN WYLES.\*

As long as babies continue to vex the spirit of the photographer, it is probable that perplexed and much-enduring individual will be interested in anything offering a possibility of shortening the camera exposure. Indeed, even for others than restless juveniles the shorter the exposure the better, if other things remain equal. Hence nostrums and quackeries innumerable have been offered, and much legitimate effort has been put forth in connection with the chemical, optical, and mechanical departments of our art-science to obtain this desirable consummation.

One of the latest claimants for popular favour (though not entirely new) is found in allowing actinic light in some form to impinge upon the plate either as a pre- or post-exposure, or in some cases simultaneously with the action of the picture on the plate. Many of the ways suggested of applying this extra light, however, are unmanageable in their nature and variable in their results; hence it is not surprising that some difference in the opinions as to their efficiency at all should exist. For instance, it might be anticipated that by the use of opal-glass before the lens the amount of light transmitted would much depend upon the angular relations of the lens to the window. If the instrument pointed away from the light little would enter the camera, whereas if turned more towards the windows the effect would rapidly increase; hence a variable result would accrue even with an exposure apparently similar. In practice this was found to be the case. Although the result in one instance might be excellent, the next plate would, perhaps, be fogged. It was impossible to be sure of the maximum good effect without sometimes going too far. The use of a gas jet in the dark room was thought of with more promise of certainty. As, however, gas is a variable product, and the pressure frequently altered, a more uniform source is desirable. No great step is needed to find one in the standard by which the illuminating power of gas itself is measured. A sperm or wax candle will give all that is required. It is handy, definite, and not over expensive. The kind that chanced to be tried by the writer is known as "Price's Ceylon wax."

An uniform source of light obtained, it remains to test how many seconds' exposure the plate will bear without

danger to fog. A few experiments showed that in my dark room ten seconds' exposure at a distance of three feet gave the maximum of good effect. I apprehend that in other rooms the amount would vary with the amount of actinic light already present there, as, probably, no dark rooms are actually "dark" in the absolute sense.

Some discrepancy exists in the accounts of the benefit derived by an accessory exposure. Some claim for it as great a reduction as half or even three-fourths of the whole. I am not inclined to be so sanguine. A reduction of from twenty-five to thirty-five per cent. seems nearer the mark, perhaps; but such a saving in time is not to be despised when a group of youngsters, graduated from one year upwards, have to be taken on a November afternoon.

The question of a pre- or post-exposure is one with which the writer has not much troubled himself, being generally content with the former. In one or two comparative experiments, however, made to test this matter, the pre-exposure was very considerably in favour of the pre-exposure. It is common enough at a railway station to see six or eight men engaged in starting a truck they wish to move; once started, however, two or three of those same men will easily suffice to propel it. Again: various seeds are soaked in water before being sown, in order to start them growing more quickly. Indeed, throughout nature a portion of force is spent in overcoming inertia before the continuance of that force can be utilized. It is probable this is the explanation of the utility of a pre-exposure of the sensitive plate.

One or two considerations should be borne in mind by experimentalists in this direction. With a bath overworked, surcharged with ether and alcohol, and already giving flat results bordering on fog, it is not likely that much good result will be found. Again: in portraiture, where softness, delicacy, and half-tone are desiderated, the use of accessory light is far more indicated than in reproductions or copies of "still life," where vigour of high light and firmness of shadow are looked for. Like all other powers, it should be used with judgment, and with reference to the effect desired to be produced.

### Correspondence.

#### LANTERN IMPROVEMENTS.

DEAR SIR,—The Englishman's fire-side is everywhere proverbial for its comforts; yet the long winter evenings, even in so cozy a retreat as this, would prove dreary without appropriate amusements. Thanks to photography, without moving from one's chair, journeys round the world may be made by viewing facsimiles of interesting scenes in various climes. Aided by the explanation of an intelligent and well-read exhibitor, nothing can be more instructive to the young, or interesting to the old. There are no means of showing such pictures in so lifelike a manner as by the aid of a good dissolving view apparatus. I warn those of your readers whom it may concern, that it is time to commence preparations. A true sportsman, before starting on a campaign, takes care minutely to examine his arms, and see that he has sufficient munitions for his purposes. An exhibitor who hopes to render his services acceptable must make this plan a duty; and it is the tyro's best method of making himself acquainted with the uses and action of the various parts of his apparatus. It should be done methodically.

With a view of rendering assistance to beginners, allow me to suggest that the bodies of the lanterns first be taken into consideration. Let them be well cleaned. If made of wood, see that the panels have not become cracked or warped; if of tin, that they are not bulged, and that the doors act without noise. A little French polish or black Japan, as the case may be, will, if needed, greatly improve

\* A communication to the Manchester Photographic Society.



their appearance. The latter is used as a varnish, and the tin work should be made warm. The nozzles should next be examined, and the lenses taken out and cleaned. A few drops of spirits of wine and an old silk handkerchief will greatly aid this operation. The condensers should be kept in boxes, and only adjusted to the lanterns when required for use; otherwise they are liable to be spoilt by getting scratched.

Having thus far got everything in order, we now see to the lighting apparatus. If lamps are used, having been well cleaned, see that they are perfect, and that their parts act freely, otherwise fingers are likely to be burned, and everything go wrong. The glass chimneys should be of the best. There is a common sort sold which are worse than useless. As accidents may happen, it is best always to carry a double set. If gas is to be used, the bags should be inflated by means of a pair of bellows, placed between their pressure-boards, and the proper weight applied. Then, on a piece of stick standing upright on the floor, mark the highest angle formed by the pressure-boards. Leave them for an hour. If, after that time, on applying the stick, it is found that the angle remains at the same height, the bags may be considered trustworthy. Blow-pipes and tubing should be blown through, to test if they be free. This is especially necessary with the rigid ones, as they accumulate rust from the wire-coil inside them; also, in time, they are apt to become brittle and cracked. A good way to preserve their flexibility is to give them occasionally two or three coats of spirit varnish of a soft nature, applied with a sponge. Care should be taken that unions are not subjected to rough usage, otherwise they might prove worthless. A washer made of leather is the best remedy. A sufficient quantity of materials used for lighting, making gas, and other little etceteras, should always be kept in readiness.

JAMES MARTIN.

5, Clarence Place, Ilfracombe.

## Proceedings of Societies.

### SOUTH LONDON PHOTOGRAPHIC SOCIETY.

#### *Annual Dinner.*

THE Annual Dinner of this Society was eaten at the Cafe Royal, Regent Street, on Thursday, the 17th inst., the Rev. F. F. Statham, M.A., President, occupying the chair, and Mr. Sebastian Davis and Mr. Jabez Hughes the two vice-chairs. The gathering was very large, as it was known to the members that a presentation to the President was to be made in the course of the evening.

After a capital dinner, and the usual loyal toasts,

Mr. JABEZ HUGHES, in a genial and effective speech, introduced the subject of the presentation, and expressed his gratification that such an unusually large and goodly company was present, giving especial force to the sentiment which had inspired the members unanimously in regard to the presentation. Only some present could remember how fifteen years ago a small band used to meet together on the other side of the water, for the purpose of cultivating the art of photography. The society was then connected with a literary institute, from which, however, it afterwards separated, and continued its meetings in the school-room kindly lent for that purpose by the President. Since then it had removed first to the east, then to the central portion of London, and afterwards to the west. Throughout its career the members had worked hard, had seen their numbers gradually increase, and although older societies had died out, there were no signs of decay in the South London Society—(applause)—which, it might be said truly, was never in a more healthy state than at the present time. How, then, did it happen that this society had none of the elements which destroyed other societies? He (Mr. Hughes) was not able to answer the question fully; but unquestionably there was one element which had much to do with its success. It had had from the very first for its president a gentleman of high culture, full of information, earnest in promoting their interests, and ever ready to give his attention to the humblest as well as the ablest of the members. This had gone on year after year, in

season and out of season; the president had been always at his post, always ready with his winning smile, and with his wise counsel to help and support the society. Notwithstanding his special duties, he had continued year after year, for fifteen years, to assist the society in this way, and at the end of that time he was more heartily loved than he had ever been. (Applause.) No man could have better discharged the duties of president than had Mr. Statham. He attended the out-door excursions; as if that was not enough, he invited every year the members to partake of his hospitality, on which occasions were spent an afternoon and evening as pleasant as an English gentleman could offer to his friends. It was to do honour to Mr. Statham that the large gathering had assembled there that night. Mr. Statham would remember that some time ago he sat for his portrait to Mr. Valentine Blanchard, copies of which it had been determined to distribute amongst the members as the presentation picture of the year. This portrait had, however, been enlarged to life-size by the Autotype Company and painted in oils; and when it was exhibited at the Technical Exhibition of the Society, it was felt that it ought not to be allowed to go astray in the world, but ought to be in the possession of Mr. Statham himself. It was determined to procure this portrait, and the members of the society desired that night to ask their President to accept it as a small and insignificant recognition of the services he had rendered to the society. (Applause.) Accompanying the picture was a memorial on vellum, which, to a certain extent, expressed the sentiments with which the members were actuated in presenting the testimonial. They did not attach any value to the picture itself, excepting as a token of the deep and sincere affection they owed to the gentleman to whom it was presented.

The portrait, which was an exceedingly fine work of art, and an admirable likeness, was then uncovered, and the memorial presented to Mr. Statham, after which the health of the latter was enthusiastically drunk.

Mr. STATHAM, in reply, said he was most completely and thoroughly taken by surprise, and felt he was quite unable adequately to express his appreciation of the kindness which had been manifested towards him. He had not the remotest idea of what was about to be done, and appreciating, as he did, most deeply the testimonial offered to him, he was quite incompetent to give expression to the feelings which animated his breast. He would say, at all events, that the gift was one which any man (even he who had served his country for long years) might be proud to receive, but one which he thought far exceeded his deserts. From the first this society had had the right elements within it, for it was a band of friends associated together by a common love for artistic pursuits, and the fact of being animated by one feeling sufficed to explain that success to which Mr. Hughes had referred. There had never been any ill-will or jealousy in the society, because the members had always had an affectionate regard for each other, and thus were not likely to quarrel. If there was any merit due to himself, it was that he had endeavoured to allow everyone to have an opportunity of putting forth his opinions, and the youngest member had always felt he could utter his thoughts without any restraint. It had never occurred to him that there had been any tendency on the part of any one to exalt himself at the expense of another, and this he could not help thinking should be the characteristic of all searchers after truth. In regard to the society, he would say that some of the most enduring pleasures of his life were connected with it. He did hope to live a few years longer, and though he did not profess to be a brilliant man, he did strive to be a useful one in his day and generation. He was very glad to know the testimonial was accompanied by a memorial. Had it not been so, he should have asked for some expression of feeling, that his descendants might be enabled to say he was a man who had borne an honourable name. (Applause.) He was one of the descendants of the ejected Nonconformist ministers of Charles II., and long before that could trace back his family for several generations to the time of Richard II. The family name had never been disgraced, and he did hope that this honourable feeling would be carried down to following generations. (Applause.) The testimonial was to him far more valuable than any piece of plate, and he hoped his children and his children's children would preserve it as it deserved to be. (Applause.)

Dr. MANN, in proposing "Success to the South London Photographic Society," said he did so with peculiar pleasure, because the society not only knew how to secure a good president, but knew also how to appreciate him.

Mr. EDWIN COCKINO, hon. sec., responded. The Society had done much in the way of introducing what was new and useful.



During the past year a considerable advance had been made. The members had increased, and there was every prospect of a great future before the Society. That future, however, depended to a great extent upon the members themselves, and he hoped every exertion would be put forward to make the Society something more than it had ever been before. (Hear, hear.)

The CHAIRMAN then proposed "Success to the Photographic Society of Great Britain." In the course of his remarks he alluded to the important part which photography would play in connection with scientific discoveries. Especially was this seen in the recent observations of the transit of Venus. Hitherto astronomers had been much puzzled by the peculiar shape which the planet assumed in commencing its passage across the disc of the sun. Instead of being of a circular form, it somehow dropped, and assumed the shape of a pear. Photography, however, noticed no such appearance, and thus the peculiar shape was conjectured simply to arise from the infirmity of our visual organs. Should this turn out to be correct, the discovery would prove the most remarkable one which had been made for some time past, and he mentioned the fact to show that no one could tell what important part photography might not play in the science of the future. In regard to Photographic Societies generally, he would say that he had always looked upon the proceedings of the London Photographic Society with the utmost interest. There had, perhaps, been a little more activity than usual in the Society; but, after all, it was better to have boiling water than cold. (Laughter.) If there had been differences, these would subside in time, and he believed all would come right. (Hear, hear.)

Mr. SPILLER (President of the Photographic Society), whose name was associated with the toast, observed that he had to follow a line of presidents among whom had been Sir Charles Eastlake, Lord Chief-Baron Pollock, and Mr. Glaisher; and the crown had now descended upon himself. He took a deep interest in the society, and had had some years' experience of its working, and should be proud if, in holding his present office, he was enabled to be of any service (hear, hear). He was present that evening as a humble member of the South London Society, and was glad to recognise many who were members of both societies. In reference to the special event of the evening, Mr. Spiller said that one of the contributions sent in to the annual exhibition of the Photographic Society was the magnificent portrait at the end of the room. He could hardly tell the pleasure with which he looked upon it, both as a work of art and as a likeness; and it was consequently with greater regret that he found he could not give it the place of honour without transgressing one of the rules which confined the exhibition to untouched photography. In conclusion, Mr. Spiller referred to the important labours which were being carried on by Captain Abney, Lord Lindsay, and others in connection with the transit of Venus.

Mr. S. DAVIS then, in a thoughtful speech, proposed the toast of "Amateur and Professional Photography," coupling with the former the name of Mr. Frank Howard, and with the latter Mr. S. Fry and Mr. Bird.

Mr. FRANK HOWARD, in responding on behalf of "Amateur Photography," expressed his regret that the ranks of the amateur photographers did not increase in number. The labours of amateurs had been of the utmost value in experimenting and in testing the value of new processes, and they had been able to devote an amount of time in this direction which the professional man found impossible. Again, if it were not for amateurs, Mr. Howard remarked, with some humour, who would buy all the highly-finished and elaborate apparatus which enterprising manufacturers were constantly introducing? (Laughter.)

Mr. S. FRY observed that photographers, in respect to such work as was exhibited that evening, were rather hardly used. A coloured portrait, no matter how beautiful, could not be admitted into a photographic exhibition, because it was not photography; while on the other hand, were it to be sent to the Royal Academy, the latter would say, "This is not art; we cannot have it here" (laughter). And so, between the two fires, the photographer came off badly. In conclusion, Mr. Fry dwelt upon the value of the South London Photographic Society in regard to the attention it had always devoted to art.

Mr. WALTER BIRD, in responding for commercial photography, referred to the importance of obtaining permanency in photography, an aim which the firm he was associated with made pre-eminent effort to secure. After a brief but able speech,

The CHAIRMAN proposed the health of the "Visitors," coupling with the toasts the names of Dr. Mann, Mr. Matthew Whiting, and Mr. Baynham Jones.

Dr. MANN, in reply, referred to the phenomenon of the "black

drop" in the transit of Venus, of which mention has been made by the Chairman. He (Dr. Mann) was not sure that photography would give the explanation, for, in examining some apparatus with the Astronomer-Royal, he had in some cases seen the "black drop," while in others it had been absent. The true value of photography to science consisted, he thought, in the fact that every observation was permanent, and could be referred to again and again. Had Captain Cook's observation of the last transit of Venus been recorded by photography, there would have been no necessity for the immense trouble which had recently been taken. Dr. Mann then alluded to the coolness and accuracy displayed by Captain Abney in using an instrument by which sixty photographs were taken, and which was so carefully timed as to begin and end with the passage of the planet across the sun's disc; and concluded by expressing the pleasure he felt at being present that evening.

The toast of the "Press," coupled with the names of Messrs. Wharton Simpson, J. T. Taylor, William Sawyer, and C. Pearce, was given and duly acknowledged.

Various songs and glees, sung by the members, added to the brightness of the festivity. Mr. Howard sang a photographic comic song, detailing the mishaps with dry plates of that unfortunate photographer whose long sufferings he has before recorded. Mr. Tully gave some capital comic songs. The evening was in every way a success.

#### MANCHESTER PHOTOGRAPHIC SOCIETY.

The ordinary monthly meeting of this Society was held at the Memorial Hall, on Thursday evening, the 10th inst, Mr. THOMAS HATWOOD, Vice-President, in the chair.

After the routine business, Mr. BENJAMIN WYLES, of Southport, read a short paper "On Accessory Exposure of the Sensitive Plate" (see page 615), and exhibited a number of very fine specimens of card portraits in illustration of his remarks. In reply to a question by the Secretary,

Mr. WYLES said he had found the effect to be greater when the plate had been exposed to light before, rather than after, exposure in the camera.

Mr. FRANKLAND exhibited two fine specimens of highly-glazed portraiture by Mr. Sarony.

Mr. POLLITT showed an enlarged view of the Pyramids, 15 by 12, from one of Professor Piazzi Smyth's negatives, 2½ by 2½. This was an excellent specimen of enlarging, being very perfect and sharp.

Mr. NOTON said he had been trying to make some nitro-glucose, and thought he had succeeded in producing 258 grains of that substance. The uncertainty of obtaining chemically-pure monohydrated nitric acid, and the conditions as to water not being present, had caused him to put off the attempt to a more favourable opportunity; but Mr. W. B. Bolton's two communications in *The British Journal* for August last had reminded him of a memorandum he had made about four years ago at the foot of page 128 of *The British Journal Almanac* for 1869, and that he had not yet answered the query alluded to, viz.,—Why not use saltpetre instead of nitric acid? The experiment was tried yesterday, and the result was on the table. Some saltpetre was rubbed to a fine powder and dried in the oven. Some lump sugar was treated in the same way. The sulphuric acid was put out of doors to get cold. The saltpetre was put into a white preserve jar, being surrounded with cold water in a wash-hand basin—all out of doors. When the sulphuric acid was put to the saltpetre a very stiff mixture was made; more acid being added till sufficiently fluid, but still rather stiff. The dry sugar powder was dusted on, and gradually stirred in with the glass rod, no red fumes of nitrous acid being produced, and no colour. The sugar was immediately changed, and the mixture became viscous. After standing some time covered with a glass plate to keep in the nitric acid fumes (which were very moderate in comparison with those given off in making gun-cotton with saltpetre, the temperature being 100 degrees lower at least) a small portion was dropped in to cold water; the sulphate of potash gradually dissolved away, leaving the nitro-glucose in the form of a white powder. The large mixture was then thinned considerably with cold water stirred in, and all put to filter. The nitro-glucose, being still in the form of a white powder (like starch in cold water), was well washed on the filter. The top of the paper was then got together, all lifted out of the funnel, and held in warm water; this united the particles into a pasty mass. It was now freed from the paper, pulled into shreds, and kneaded under warm water for some time in making a second lot of nitro-glucose it was intended to put the



sulphuric acid into the jar first, and then stir in the saltpetre and sugar, previously ground fine and thoroughly mixed together. If it turn out that the nitro-glucose made by the aid of saltpetre in lieu of the chemically-pure monohydrated nitric acid is good, and possesses the extraordinary properties mentioned by Dr. Monckhoven, a great impediment to its more extensive use will have been removed.

Mr. Noton exhibited a pair of small blowing engines, of his own manufacture, in the tea room. These engines excited a good deal of interest in the mechanically-inclined members.

The usual complimentary votes were passed, and the meeting was then adjourned.

## Talk in the Studio.

**WEST RIDING OF YORKSHIRE PHOTOGRAPHIC SOCIETY.**—The next ordinary meeting of the above society will be held on Monday evening, the 28th December, at half-past seven, at Leuchter's Rooms, Ivegate, Bradford. Subject—Passing of Rules, &c. Mr. Manley, of Brighouse, will also give a Lantern Exhibition, to which members are invited to introduce a friend (lady or gentleman).

**PREPARING PLATES BY DAYLIGHT.**—The *American Chemist* says:—"Dry plates can be prepared by daylight, according to Prof. C. F. Himes, as follows:—"Glass plates coated with ordinary brown-iodized negative collodion are sensitized in the usual argentic nitrate bath, in bright daylight, and are then thoroughly rinsed in distilled water to remove the larger portion of adhering silver solution. They are then flowed with a five per cent. solution of potassic iodide, or are exposed to the action of sunlight for several hours, and then dried. Such plates are insensitive to light, and may be made sensitive by immersing them in the dark in a solution of tannin, fifteen grains to the ounce of water, for a few minutes. Being then dried they will remain sensitive for months."

## To Correspondents.

THE YEAR-BOOK OF PHOTOGRAPHY FOR 1875 will be ready in a few days. Besides the usual contents, consisting of a resume of the practical improvements of the past year, the present issue contains a larger number of original contributions than any former annual. Amongst the contributions will be found articles by Dr. Diamond, Dr. Anthony, Dr. Vogel, Dr. Liesegang, Dr. Van Monckhoven, Dr. Maidstone Smith, Dr. Phipson, Dr. Nicol, Col. Stuart Wortley, Capt. Abney, Capt. Turton, Capt. Stretton, Messrs. H. P. Robinson, Adam-Salomon, Blanchard, Dallmeyer, Mayland, Werge, Cherrill, O. G. Rejlander, Pritchard, Fry, Bedford, Window, Bovey, Spiller, Faulkner, Eliot, Slingsby, Heighway, Speucer, Beattie, Burton, Tuany, Neilson, Bruce, Perriu, Tudor Williams, Penny, Dunsday, Watson, Croughton, Briggs, Sydney Smyth, T. Gulliver, Kennett, Eve, Wilkinson, Borland, Cocking, Gregson, Gregg, Sutcliffe, Willis, Ferranti, Bool, Hedges, Mitchell, Beasley, Hooper, Rivot, Aldridge, Hauter, Johnston, Martin, Walter, Hudson, Wilson, Alexander, Gough, Brier, Tedrake, Stodart, Young, Wilstenholme, Fernely, Burgess, Asher, Pearce, Edwards, Gillard, Humphrey, and many others.

**KENNETT'S GELATINE PELLICLE.**—Notwithstanding the notification in our last that the discussion on this subject must for the present cease, we have received three more letters on the subject, which, if printed, would occupy nearly three columns. The subject is an interesting one, but the exigencies of space demand that for the present it must rest. When the personal elements evoked in the discussion have had time to subside, we shall have pleasure in hearing further testimony on the practical working of gelatine. We briefly give a few words from each of our correspondents, in order to satisfy what some of them regard as the requirements of justice. "A Worker" writes to urge that the use of a *nom de plume* in no way affects his facts, which, in justice to Messrs. Maddox and Johnston, whose work he contends is embodied in Mr. Kennett's specification, it was important should have attention called to them. He further quotes a passage from a contemporary journal, dated November 7, 1873,

pointing out that the information promised a few months previously on behalf of Mr. Kennett was withheld because of that gentleman's interest in a commercial enterprise based on the gelatinobromide process. Captain Turton sends us a long and interesting letter, which we regret we cannot, after our last week's announcement, insert at present. He thinks Mr. Kennett is bound, after his prediction as to his process superseding all the rapid dry plates, to provide dry plates which may be tried against dry plates, and undertakes to give them a fair test against wet plates and dry collodion plates, especially the Wortley plates, which have given him fine and quick results. "J. S. D." makes a vigorous protest against those who attack the use of initials, or of a *nom de guerre*, in journalistic correspondence. "A provable fact is none the less a fact," he observes, "because it is only signed X. Y. Z., or more a fact if signed by a score of well-known names. If the only authority for a statement of fact be that of the writer of the letter, then he would be bound to append his name to his statement; but if he refer to other accessible authority, the presence or absence of a real name is of no importance whatever; and it is foolish in the extreme to pretend that the statement of a fact under a *nom de plume* is either cowardly or unfair." After citing some illustrations, he adds: "'A Worker' has given his authorities for challenging Mr. Kennett's patent, and in doing so has acted fairly—so fairly that he has left it clear that his authorities are insufficient. Mr. Kennett's patent, if I understand rightly, does not rest upon any of the details quoted by 'A Worker' from the processes of Dr. Maddox and Mr. Johnston. In describing his process before the Photographic Society, in June last, Mr. Kennett distinctly acknowledged the labours of Dr. Maddox and others. He described the process of making and washing the gelatine emulsion, not as part of the patent, and finally added that after this 'his invention came in,' and that his invention consisted in drying the emulsion, and so making it keep indefinitely in the form of a pellicle. Until then, gelatine emulsions could not be kept; and to provide a means of successful preservation is, I presume, really the point of the patent. At any rate, it is clear that all that Mr. Johnston, or Dr. Maddox, or any one else, did before the patent, every one else may do still."

J. D. L.—The pyrogallie has either been of imperfect quality, or it has been previously exposed to the air. Pure fresh pyrogallie acid dissolved in alcohol will, as a rule, keep well. When it burns nearly black, as you describe, it is unfit for use. An aqueous solution with citric acid will often keep well; but it can only be used, of course, in acid development. 2. The best mode of repairing your waterproof covering will be with pieces of similar material made to adhere with a paste or varnish of india-rubber dissolved in bisulphide of carbon.

KING.—We do not know of any work on the subject of candle manufacture, nor on the manufacture of violin strings.

R. D.—The example slide you have forwarded is not suitable for the magic lantern, as, from its general opacity, it would intercept too much light. A transparency for the lantern should not be too dense in any part, and clear and transparent in the lights. The bath should be working well, giving clean, delicate, and brilliant images. The development should not be carried too far. The toning may be effected with gold, or with a solution of sulphide of ammonium.

D. E. R.—No, of course not iodized collodion; simply a plain collodion of good body, giving a tough film. It must be quite dry before applying the gelatine.

W. R. E. M.—The chief cause of risk in using collodion pictures for coloured work is, the use of an unsuitable sample of collodion. If a very horny sample is used, it is apt to split; and if a very old and decomposed sample is used, the film will sometimes split. Prolonged development will also tend to produce splitting and peeling. We have repeatedly given formulæ for matt varnishes, but if you have no experience in making varnishes, it will be wiser to buy one of those already in the market. 2. It would be quite impossible in this column to give you formulæ and instructions for producing porcelain pictures in the camera. We have published many articles on the subject. Possibly the best formulæ are those of Mr. Burgess for the eburneum process. Your own formula is pretty good, but faulty in some particulars: the use, for instance, of the hydrochloric acid is unwise. But you must be quite prepared for the fact that it is rarely possible to produce on collodion a picture as brilliant as a good paper print.

EAST LIGHT.—An east light may be made to give very good portraits, but it will involve more trouble with altering blinds than a north light. 2. About 25 feet long, by 12 feet wide, with 6 or 7 feet at eaves, and about 12 or 13 feet at ridge, will give capital proportions.

G. WILLIS.—Thanks. The subject is very interesting. If possible it will go in.

A LITTLE PHOTO.—Thanks. We fear too late for the YEAR-BOOK, but suitable for NEWS.

Several Correspondents in our next.



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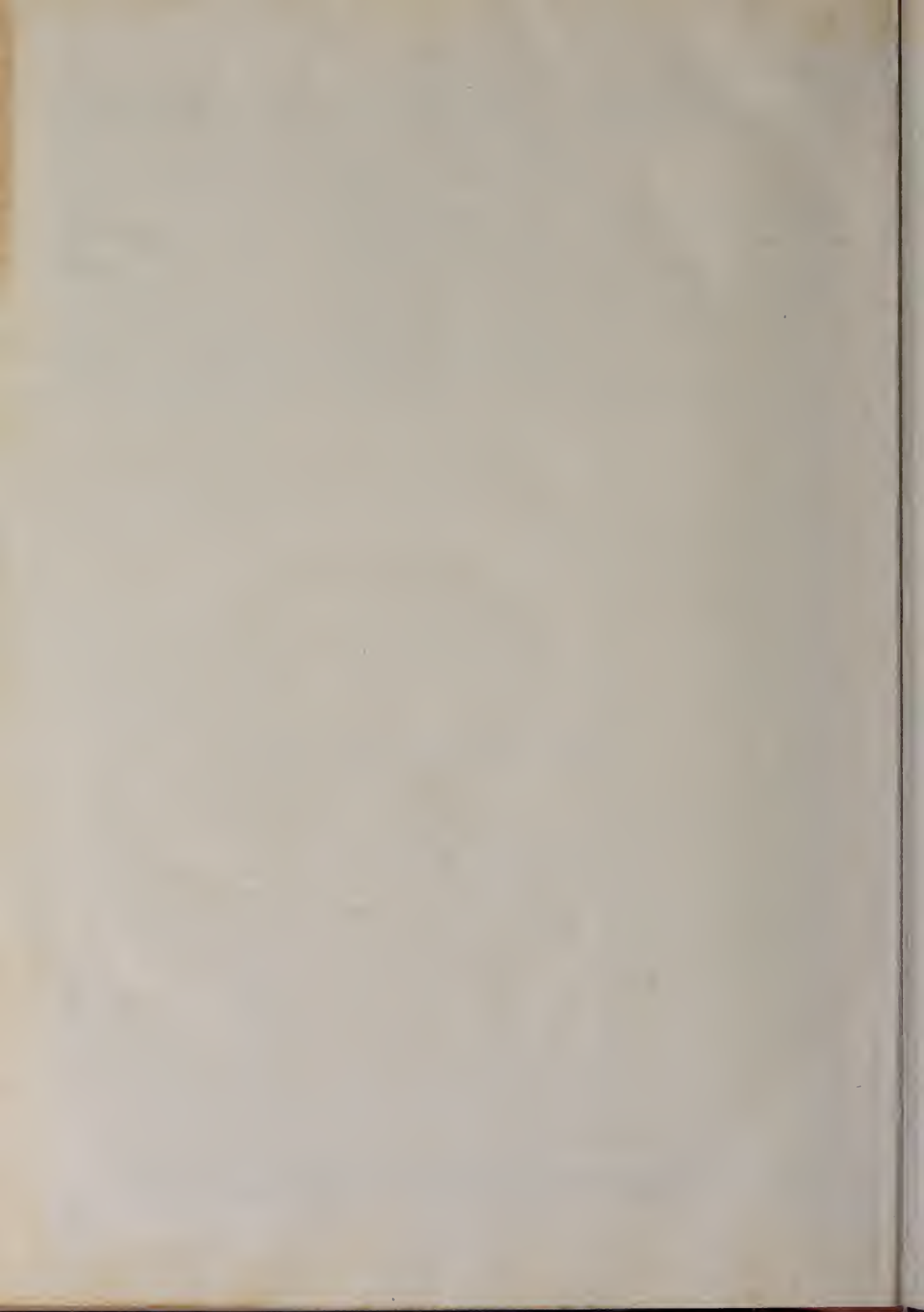
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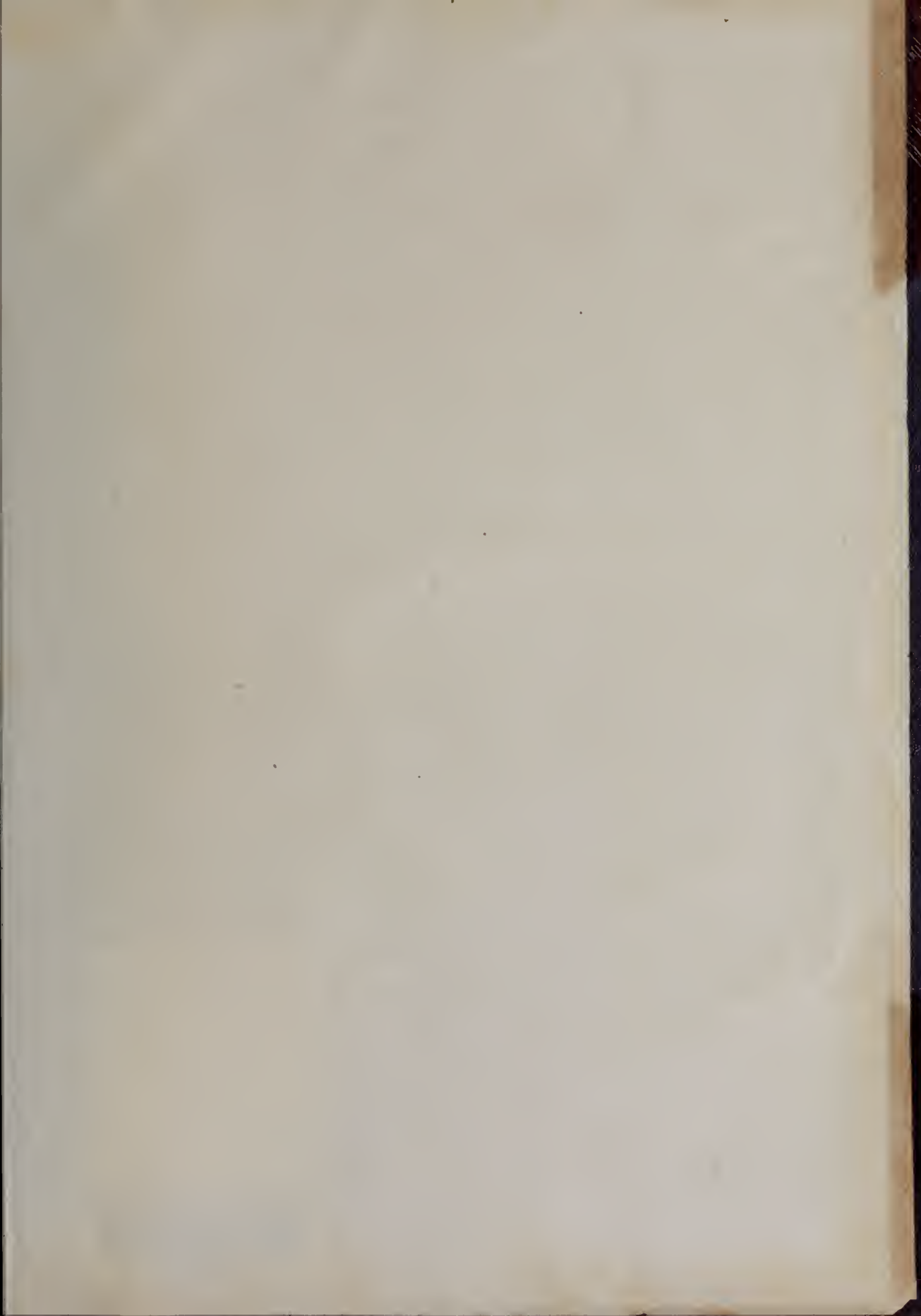




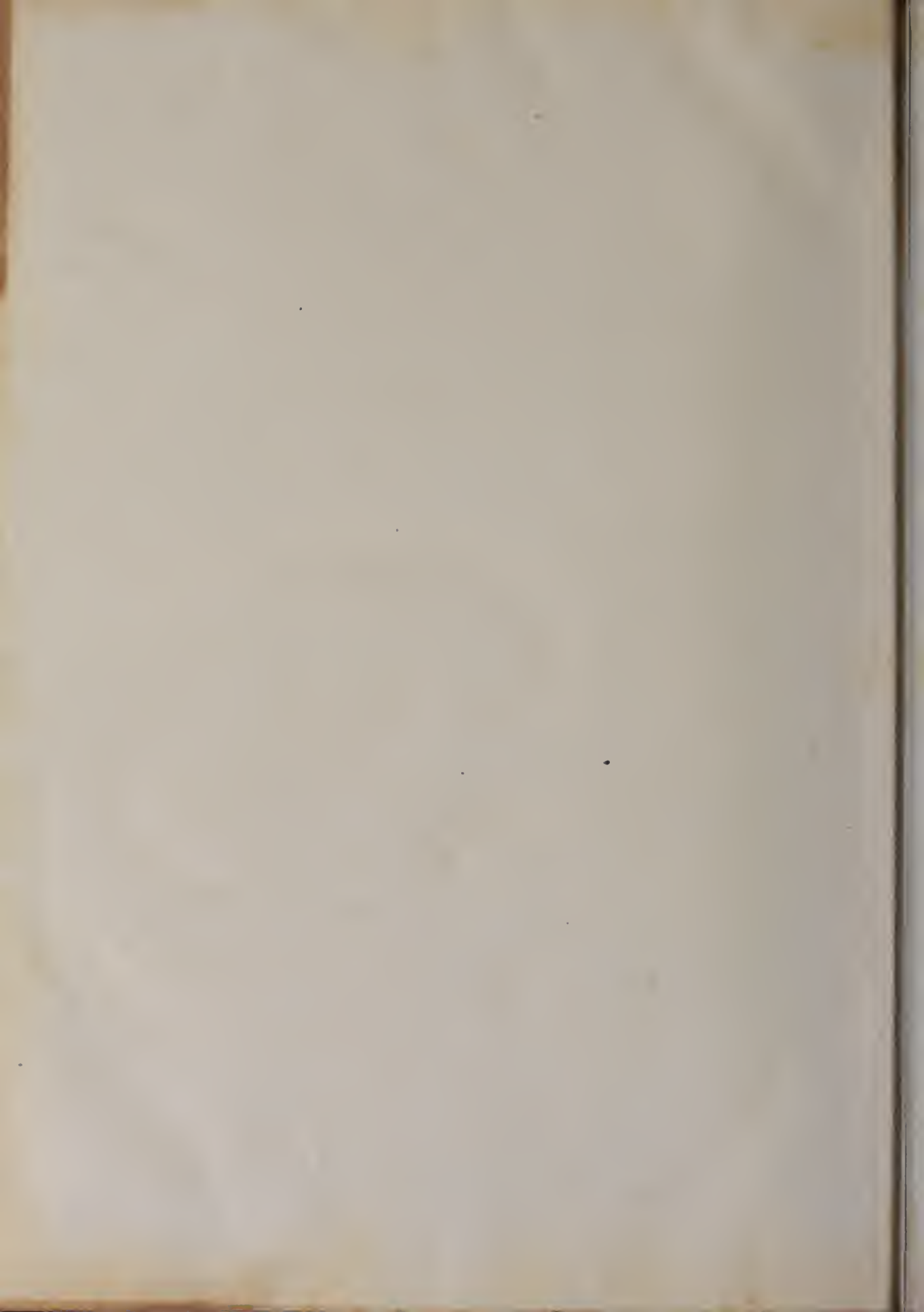
















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